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=> d que l25
L4          3811 SEA FILE=REGISTRY ABB=ON  PLU=ON  (LI(L)P(L)O(L)(TI OR V
                 OR CR OR MN OR FE OR CO OR NI OR CU OR ZR OR NB OR MO OR
                 RU OR AG OR TA OR W OR PT OR AU))/ELS
L7           521 SEA FILE=REGISTRY ABB=ON  PLU=ON  L4 AND 2-7/LI
L9          3102 SEA FILE=REGISTRY ABB=ON  PLU=ON  L4 AND 3.5-8/O
L10         2942 SEA FILE=REGISTRY ABB=ON  PLU=ON  L9 AND 0.01-1/M
L11          476 SEA FILE=REGISTRY ABB=ON  PLU=ON  L7 AND L9 AND L10
L21          473 SEA FILE=REGISTRY ABB=ON  PLU=ON  L11 AND TIS/CI
L22          210 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L21
L24          117 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L22 AND ELECTROCHEM?/SC,SX

L25           59 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L24 AND (1840-2003)/PRY,AY
                 ,PY


=> sel l25 hit rn 1-
E52 THROUGH E232 ASSIGNED

=> d l25 1-59 ibib ed abs hitstr hitind

L25  ANSWER 1 OF 59  HCAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:         2007:41410  HCAPLUS  Full-text
DOCUMENT NUMBER:          146:145947
TITLE:                    Novel electrode active material for a secondary
                          electrochemical cell
INVENTOR(S):              Barker, Jeremy; Burns, Paul; Bryan, Aiden; Grover,
                          Richard
PATENT ASSIGNEE(S):       UK
SOURCE:                   U.S. Pat. Appl. Publ., 17pp., Cont.-in-part of
                          U.S. Ser. No. 870,135.
                          CODEN: USXXCO
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   4
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     US 20070009800        A1    20070111    US 2006-531824          20060914
                                                     <--
     US 6387568            B1    20020514    US 2000-559861          20000427
                                                     <--
     US 20030027049        A1    20030206    US 2001-14822           20011026
                                                     <--
     US 6777132            B2    20040817
     US 20040265695        A1    20041230    US 2004-870135          20040616
                                                     <--
     US 7214448            B2    20070508
     WO 2008033672         A2    20080320    WO 2007-US77173         20070830
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,
             CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG,
             ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS,
             JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU,
             LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
             NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL,
             SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
             ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
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IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK,
TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,
ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: US 2000-559861 A2 20000427
<--
US 2001-14822 A3 20011026
<--
US 2004-870135 A2 20040616

US 2006-531824 A 20060914

ED Entered STN: 12 Jan 2007

AB The invention provides a novel polyanion-based electrode active material for use in a secondary or rechargeable electrochem. cell having a first electrode, a second electrode and an electrolyte.

IT 918961-43-0P, Iron lithium fluoride phosphate (FeLi2F1.3(PO4)0.9) 918961-45-2P 918961-47-4P
(electrode active material for secondary electrochem. cell)

RN 918961-43-0 HCAPLUS

CN Iron lithium fluoride phosphate (FeLi2F1.3(PO4)0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1.3	14762-94-8
O4P	0.9	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 918961-45-2 HCAPLUS

CN Iron lithium magnesium fluoride phosphate (Fe0.95Li2Mg0.05F2.2(PO4)0.6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	2.2	14762-94-8
O4P	0.6	14265-44-2
Mg	0.05	7439-95-4
Li	2	7439-93-2
Fe	0.95	7439-89-6

RN 918961-47-4 HCAPLUS

CN Iron lithium manganese hydroxide phosphate (Fe0.2Li2Mn0.8(OH)1.6(PO4)0.8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1.6	14280-30-9
O4P	0.8	14265-44-2
Mn	0.8	7439-96-5
Li	2	7439-93-2
Fe	0.2	7439-89-6

INCL 429231900; 429231950; 429221000; 429231500; 429224000; 429220000; 429225000; 429223000; 429217000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 49
IT 918961-43-0P, Iron lithium fluoride phosphate (FeLi2F1.3(PO4)0.9) 918961-44-1P, Sodium vanadium hydroxide phosphate (NaV(OH)1.3(PO4)0.9) 918961-45-2P 918961-46-3P, Sodium vanadium chloride phosphate (NaVCl1.6(PO4)0.8) 918961-47-4P 918961-48-5P, Iron lithium fluoride silicate (FeLi2F1.2(SiO4)0.9) 918961-49-6P, Lithium vanadium fluoride phosphate (LiVF1.3(PO4)0.9)
(electrode active material for secondary electrochem. cell)

L25 ANSWER 2 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:545195 HCAPLUS Full-text
DOCUMENT NUMBER: 143:81020
TITLE: Lithium battery showing both high electric potential and lithium intercalation capacity.
INVENTOR(S): Jouanneau-Si Larbi, Severine; Le Cras, Frederic; Bourbon, Carole; Gauthier, Gilles
PATENT ASSIGNEE(S): Commissariat a l'Energie Atomique, Fr.
SOURCE: Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1544930	A2	20050622	EP 2004-354039 <--	20041202
EP 1544930	A3	20070725		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
FR 2864348	A1	20050624	FR 2003-14865 <--	20031218
FR 2864348	B1	20060310		
US 20050136331	A1	20050623	US 2004-998985 <--	20041130
JP 2005183395	A	20050707	JP 2004-368132 <--	20041220
CN 1641915	A	20050720	CN 2004-10102151 <--	20041220
PRIORITY APPLN. INFO.:			FR 2003-14865 A <--	20031218

ED Entered STN: 24 Jun 2005
AB A lithium battery consists of at least one first electrode consisting of active material into which the Li+ cations are able to be inserted, a second electrode, and an electrolyte. The active material in the first electrode consists of a condensed linear composition possessing at least two tetrahedra, resp. of type AO4 and A'O4, linked by one common oxygen. An ion M2+ of a transition metal of oxidation state +2 and chosen from between Ni2+, Co2+, Mn2+, Fe2+, and Tl2+ is inserted into the condensed linear composition and the ratio between the number of Li+ cations which can be inserted into the active material and the number of transition metal M2+ ions is strictly greater than 1. A and A' are chosen from between P5+, Si4+, Al3+, S6+, Ge4+, and B3+. One possible active material is LiaXbMZd(A2O7)e(A'O3)f, where X represents at least one alkali metal at an oxidation state of 1+ chosen from among Li+, Na+, K+, and M represents at least one transition metal of oxidation state 2+ chosen from among Ni2+, Co2+, Mn2+, Fe2+, and Tl2+, and Z represents at least one transition metal chosen from the group Cu+, Ag+, Mg2+, Ca2+, Sr2+, Zn2+,

V2+, Cu2+, Al3+, Ti3+, Cr3+, Fe3+, Mn3+, Ga3+, V3+, Ge3+, Sn3+, Mo3+, Ti4+, V4+, V5+, Ta5+, Nb5+ and Mo6+, the chemical elements O, S, F, and Cl, and a grouping of type A"O4, and a>1 and b and d≥0, and at least e or f>0. A" is a cation chosen from P5+, Si4+, Al3+, S6+, Ge4+, B3+.

IT 855205-84-4P
(carbon supported; lithium battery showing both high elec. potential and lithium intercalation capacity)
RN 855205-84-4 HCAPLUS
CN Lithium nickel (diphosphate) metaphosphate (Li3Ni(P2O7)(PO3)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O3P	2	15389-19-2
O7P2	1	14000-31-8
Ni	1	7440-02-0
Li	3	7439-93-2

IT 855205-80-0P, Lithium nickel (diphosphate) phosphate (Li4Ni3(P2O7)(PO4)2)
(plain and carbon-supported; lithium battery showing both high elec. potential and lithium intercalation capacity)
RN 855205-80-0 HCAPLUS
CN Lithium nickel (diphosphate) phosphate (Li4Ni3(P2O7)(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
O7P2	1	14000-31-8
Ni	3	7440-02-0
Li	4	7439-93-2

IC ICM H01M004-50
ICS H01M004-52
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT 855205-84-4P
(carbon supported; lithium battery showing both high elec. potential and lithium intercalation capacity)
IT 855205-80-0P, Lithium nickel (diphosphate) phosphate (Li4Ni3(P2O7)(PO4)2)
(plain and carbon-supported; lithium battery showing both high elec. potential and lithium intercalation capacity)

L25 ANSWER 3 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:283979 HCAPLUS Full-text
DOCUMENT NUMBER: 142:358045
TITLE: Rechargeable lithium battery
INVENTOR(S): Hwang, Duck-Chul; Hwang, Seung-Sik; Lee, Sang-Mock; Cho, Chung-Kun; Choi, Yun-Suk
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 21 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050069775	A1	20050331	US 2004-933384 <--	20040903
KR 2005030440	A	20050330	KR 2003-66900 <--	20030926
JP 2005108810	A	20050421	JP 2004-210601 <--	20040716
CN 1601798	A	20050330	CN 2004-10082666 <--	20040927
PRIORITY APPLN. INFO.:			KR 2003-66900 A <--	20030926

ED Entered STN: 03 Apr 2005

AB A rechargeable lithium battery includes a pos. electrode having a pos. active material to reversibly intercalate and deintercalate lithium ions, a neg. electrode having a neg. active material, and an electrolyte, wherein an arithmetic mean Ra of a surface roughness of the pos. electrode is 155 to 419 nm, and an arithmetic mean Ra of a surface roughness of the neg. electrode is 183 to 1159 nm after the rechargeable lithium battery is charged and discharged.

IT 329025-35-6, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(rechargeable lithium battery)

RN 329025-35-6 HCAPLUS

CN Iron lithium phosphate (Fe2Li1-3(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

IC ICM H01M004-58
ICS H01M004-48; H01M004-50; H01M004-52

INCL 429231950; 429223000; 429231100; 429231200; 429224000; 429218100; 429231300; 429231000; 429220000; 429221000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1314-62-1, Vanadium oxide (V2O5), uses 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium manganese oxide limno2 12162-92-4, Lithium vanadium oxide (LiV2O5) 12190-79-3, Cobalt lithium oxide (CoLiO2) 13568-36-0, Lithium nickel vanadium oxide (LiNiVO4) 21324-40-3, Lithium hexafluorophosphate 179802-95-0, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.1Ni0.8O2) 329025-35-6, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(rechargeable lithium battery)

L25 ANSWER 4 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:906086 HCAPLUS Full-text

DOCUMENT NUMBER: 141:382165

TITLE: Solid electrolyte and total solid secondary battery containing the electrolyte

INVENTOR(S): Ugaji, Masaya; Mino, Shinji; Shibano, Yasuyuki; Ito, Shuji

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: PCT Int. Appl., 41 pp.

CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004093236	A1	20041028	WO 2004-JP5424 <--	20040415
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2004335455	A	20041125	JP 2004-119042 <--	20040414
JP 3690684	B2	20050831		
EP 1630893	A1	20060301	EP 2004-727754 <--	20040415
R: DE, FR, GB				
CN 1751409	A	20060322	CN 2004-80004511 <--	20040415
US 20060216611	A1	20060928	US 2005-551935 <--	20051004
PRIORITY APPLN. INFO.:			JP 2003-113850 A <--	20030418
			WO 2004-JP5424 W	20040415

ED Entered STN: 29 Oct 2004
AB The electrolyte, comprising Li, O, P and a transition metal element, is represented by LixSTyOz (T = transition metal; x =2-7; y = 0.01-1; and z = 3.5-8). The battery has the above electrolyte between a cathode and an anode.
IT 782495-70-9, Lithium tungsten oxide phosphate (Li3.2W0.1O0.4(PO4)) 782495-72-1, Lithium tungsten oxide phosphate (Li3.66W0.33O1.32(PO4))
(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)
RN 782495-70-9 HCAPLUS
CN Lithium tungsten oxide phosphate (Li3.2W0.1O0.4(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
W	0.1	7440-33-7
Li	3.2	7439-93-2

RN 782495-72-1 HCAPLUS
CN Lithium tungsten oxide phosphate (Li3.66W0.33O1.32(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.32	17778-80-2
O4P	1	14265-44-2
W	0.33	7440-33-7
Li	3.66	7439-93-2

IT 782495-67-4, Lithium tungsten oxide phosphate (Li3.5W0.25O(PO4))
(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)
RN 782495-67-4 HCAPLUS
CN Lithium tungsten oxide phosphate (Li3.5W0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
W	0.25	7440-33-7
Li	3.5	7439-93-2

IT 782495-23-2, Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) 782495-24-3, Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) 782495-25-4, Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) 782495-26-5, Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) 782495-27-6, Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) 782495-28-7, Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) 782495-29-8, Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) 782495-30-1, Copper lithium metaphosphate oxide (Cu0.2Li2.8(PO3)O0.9) 782495-31-2, Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) 782495-32-3, Lithium niobium metaphosphate oxide (Li2.8Nb0.2(PO3)O0.9) 782495-33-4, Lithium molybdenum metaphosphate oxide (Li2.8Mo0.2(PO3)O0.9) 782495-34-5, Lithium ruthenium metaphosphate oxide (Li2.8Ru0.2(PO3)O0.9) 782495-35-6, Lithium silver metaphosphate oxide (Li2.8Ag0.2(PO3)O0.9) 782495-36-7, Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(PO3)O0.9) 782495-37-8, Lithium tungsten metaphosphate oxide (Li2.8W0.2(PO3)O0.9) 782495-38-9, Lithium platinum metaphosphate oxide (Li2.8Pt0.2(PO3)O0.9) 782495-39-0, Gold lithium metaphosphate oxide (Au0.2Li2.8(PO3)O0.9) 782495-41-4, Lithium tungsten metaphosphate oxide (Li2.8W0.01(PO3)O0.9) 782495-42-5, Lithium tungsten metaphosphate oxide (Li2.8W0.05(PO3)O0.9) 782495-43-6, Lithium tungsten metaphosphate oxide (Li2.8W0.1(PO3)O0.9) 782495-44-7, Lithium tungsten metaphosphate oxide (Li2.8W0.5(PO3)O0.9) 782495-45-8, Lithium tungsten metaphosphate oxide (Li2.8W0.52(PO3)O0.9) 782495-46-9, Lithium tungsten metaphosphate oxide (Li2.8W0.6(PO3)O0.9) 782495-47-0, Lithium vanadium oxide phosphate (Li2.8V0.2O0.4(PO4)) 782495-48-1, Chromium lithium oxide phosphate (Cr0.2Li2.8O0.2(PO4)) 782495-49-2, Lithium manganese oxide phosphate (Li2.8Mn0.2O0.3(PO4)) 782495-50-5, Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) 782495-51-6, Cobalt lithium oxide phosphate (Co0.2Li2.8O0.17(PO4)) 782495-52-7,

Lithium nickel oxide phosphate (Li2.8Ni0.2O0.1(PO4)) 782495-53-8, Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) 782495-54-9, Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) 782495-55-0, Lithium niobium oxide phosphate (Li2.8Nb0.2O0.4(PO4)) 782495-56-1, Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) 782495-57-2, Lithium silver phosphate (Li2.8Ag0.2(PO4)) 782495-58-3, Lithium tantalum oxide phosphate (Li2.8Ta0.2O0.4(PO4)) 782495-59-4, Lithium tungsten oxide phosphate (Li2.8W0.2O0.5(PO4)) 782495-60-7, Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) 782495-61-8, Lithium vanadium oxide phosphate (Li3.75V0.25O(PO4)) 782495-62-9, Chromium lithium oxide phosphate (Cr0.25Li3.5O(PO4)) 782495-63-0, Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4)) 782495-64-1, Lithium niobium oxide phosphate (Li3.75Nb0.25O(PO4)) 782495-65-2, Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4)) 782495-66-3, Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4)) 782495-69-6, Lithium tungsten oxide phosphate (Li3.02W0.01O0.04(PO4)) 782495-74-3, Lithium tungsten oxide phosphate (Li5WO4(PO4)) 782495-76-5, Lithium tungsten oxide phosphate (Li7W2O8(PO4))
(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)

RN 782495-23-2 HCAPLUS
CN Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ti	0.2	7440-32-6
Li	2.8	7439-93-2

RN 782495-24-3 HCAPLUS
CN Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
V	0.2	7440-62-2
Li	2.8	7439-93-2

RN 782495-25-4 HCAPLUS
CN Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Cr	0.2	7440-47-3
Li	2.8	7439-93-2

RN 782495-26-5 HCAPLUS

CN Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Mn	0.2	7439-96-5
Li	2.8	7439-93-2

RN 782495-27-6 HCAPLUS
CN Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Li	2.8	7439-93-2
Fe	0.2	7439-89-6

RN 782495-28-7 HCAPLUS
CN Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Co	0.2	7440-48-4
Li	2.8	7439-93-2

RN 782495-29-8 HCAPLUS
CN Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ni	0.2	7440-02-0
Li	2.8	7439-93-2

RN 782495-30-1 HCAPLUS
CN Copper lithium metaphosphate oxide (Cu0.2Li2.8(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Cu	0.2	7440-50-8
Li	2.8	7439-93-2

RN 782495-31-2 HCAPLUS

CN Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Zr	0.2	7440-67-7
Li	2.8	7439-93-2

RN 782495-32-3 HCAPLUS
CN Lithium niobium metaphosphate oxide (Li2.8Nb0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Nb	0.2	7440-03-1
Li	2.8	7439-93-2

RN 782495-33-4 HCAPLUS
CN Lithium molybdenum metaphosphate oxide (Li2.8Mo0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Mo	0.2	7439-98-7
Li	2.8	7439-93-2

RN 782495-34-5 HCAPLUS
CN Lithium ruthenium metaphosphate oxide (Li2.8Ru0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ru	0.2	7440-18-8
Li	2.8	7439-93-2

RN 782495-35-6 HCAPLUS
CN Lithium silver metaphosphate oxide (Li2.8Ag0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ag	0.2	7440-22-4
Li	2.8	7439-93-2

RN 782495-36-7 HCAPLUS

CN Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ta	0.2	7440-25-7
Li	2.8	7439-93-2

RN 782495-37-8 HCAPLUS
CN Lithium tungsten metaphosphate oxide (Li2.8W0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.2	7440-33-7
Li	2.8	7439-93-2

RN 782495-38-9 HCAPLUS
CN Lithium platinum metaphosphate oxide (Li2.8Pt0.2(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Pt	0.2	7440-06-4
Li	2.8	7439-93-2

RN 782495-39-0 HCAPLUS
CN Gold lithium metaphosphate oxide (Au0.2Li2.8(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Au	0.2	7440-57-5
Li	2.8	7439-93-2

RN 782495-41-4 HCAPLUS
CN Lithium tungsten metaphosphate oxide (Li2.8W0.01(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.01	7440-33-7
Li	2.8	7439-93-2

RN 782495-42-5 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.05(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.05	7440-33-7
Li	2.8	7439-93-2

RN 782495-43-6 HCAPLUS
CN Lithium tungsten metaphosphate oxide (Li2.8W0.1(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.1	7440-33-7
Li	2.8	7439-93-2

RN 782495-44-7 HCAPLUS
CN Lithium tungsten metaphosphate oxide (Li2.8W0.5(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.5	7440-33-7
Li	2.8	7439-93-2

RN 782495-45-8 HCAPLUS
CN Lithium tungsten metaphosphate oxide (Li2.8W0.52(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.52	7440-33-7
Li	2.8	7439-93-2

RN 782495-46-9 HCAPLUS
CN Lithium tungsten metaphosphate oxide (Li2.8W0.6(PO3)O0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.6	7440-33-7
Li	2.8	7439-93-2

RN 782495-47-0 HCAPLUS

CN Lithium vanadium oxide phosphate (Li2.8V0.2O0.4(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
V	0.2	7440-62-2
Li	2.8	7439-93-2

RN 782495-48-1 HCAPLUS
CN Chromium lithium oxide phosphate (Cr0.2Li2.8O0.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.2	17778-80-2
O4P	1	14265-44-2
Cr	0.2	7440-47-3
Li	2.8	7439-93-2

RN 782495-49-2 HCAPLUS
CN Lithium manganese oxide phosphate (Li2.8Mn0.2O0.3(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.3	17778-80-2
O4P	1	14265-44-2
Mn	0.2	7439-96-5
Li	2.8	7439-93-2

RN 782495-50-5 HCAPLUS
CN Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.17	17778-80-2
O4P	1	14265-44-2
Li	2.8	7439-93-2
Fe	0.2	7439-89-6

RN 782495-51-6 HCAPLUS
CN Cobalt lithium oxide phosphate (Co0.2Li2.8O0.17(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.17	17778-80-2
O4P	1	14265-44-2
Co	0.2	7440-48-4
Li	2.8	7439-93-2

RN 782495-52-7 HCAPLUS
CN Lithium nickel oxide phosphate (Li2.8Ni0.2O0.1(PO4)) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O	0.1	17778-80-2
O4P	1	14265-44-2
Ni	0.2	7440-02-0
Li	2.8	7439-93-2

RN 782495-53-8 HCAPLUS
CN Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.1	17778-80-2
O4P	1	14265-44-2
Cu	0.2	7440-50-8
Li	2.8	7439-93-2

RN 782495-54-9 HCAPLUS
CN Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.3	17778-80-2
O4P	1	14265-44-2
Zr	0.2	7440-67-7
Li	2.8	7439-93-2

RN 782495-55-0 HCAPLUS
CN Lithium niobium oxide phosphate (Li2.8Nb0.2O0.4(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
Nb	0.2	7440-03-1
Li	2.8	7439-93-2

RN 782495-56-1 HCAPLUS
CN Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.5	17778-80-2
O4P	1	14265-44-2
Mo	0.2	7439-98-7
Li	2.8	7439-93-2

RN 782495-57-2 HCAPLUS
CN Lithium silver phosphate (Li2.8Ag0.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2

Ag	0.2	7440-22-4
Li	2.8	7439-93-2

RN 782495-58-3 HCAPLUS
CN Lithium tantalum oxide phosphate (Li2.8Ta0.2O0.4(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
Ta	0.2	7440-25-7
Li	2.8	7439-93-2

RN 782495-59-4 HCAPLUS
CN Lithium tungsten oxide phosphate (Li2.8W0.2O0.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.5	17778-80-2
O4P	1	14265-44-2
W	0.2	7440-33-7
Li	2.8	7439-93-2

RN 782495-60-7 HCAPLUS
CN Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ti	0.25	7440-32-6
Li	4	7439-93-2

RN 782495-61-8 HCAPLUS
CN Lithium vanadium oxide phosphate (Li3.75V0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
V	0.25	7440-62-2
Li	3.75	7439-93-2

RN 782495-62-9 HCAPLUS
CN Chromium lithium oxide phosphate (Cr0.25Li3.5O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Cr	0.25	7440-47-3
Li	3.5	7439-93-2

RN 782495-63-0 HCAPLUS

CN Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mn	0.25	7439-96-5
Li	3.25	7439-93-2

RN 782495-64-1 HCAPLUS
CN Lithium niobium oxide phosphate (Li3.75Nb0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Nb	0.25	7440-03-1
Li	3.75	7439-93-2

RN 782495-65-2 HCAPLUS
CN Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mo	0.25	7439-98-7
Li	3.5	7439-93-2

RN 782495-66-3 HCAPLUS
CN Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ta	0.25	7440-25-7
Li	3.75	7439-93-2

RN 782495-69-6 HCAPLUS
CN Lithium tungsten oxide phosphate (Li3.02W0.01O0.04(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.04	17778-80-2
O4P	1	14265-44-2
W	0.01	7440-33-7
Li	3.02	7439-93-2

RN 782495-74-3 HCAPLUS
CN Lithium tungsten oxide phosphate (Li5WO4(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
O4P	1	14265-44-2
W	1	7440-33-7
Li	5	7439-93-2

RN 782495-76-5 HCAPLUS
CN Lithium tungsten oxide phosphate (Li7W2O8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	8	17778-80-2
O4P	1	14265-44-2
W	2	7440-33-7
Li	7	7439-93-2

IC ICM H01M010-36
ICS H01B001-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 782495-70-9, Lithium tungsten oxide phosphate (Li3.2W0.1O0.4(PO4)) 782495-72-1, Lithium tungsten oxide phosphate (Li3.66W0.33O1.32(PO4))
(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)
IT 782495-67-4, Lithium tungsten oxide phosphate (Li3.5W0.25O(PO4))
(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)
IT 12190-79-3, Cobalt lithium oxide (CoLiO2) 782495-23-2, Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) 782495-24-3, Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) 782495-25-4, Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) 782495-26-5, Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) 782495-27-6, Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) 782495-28-7, Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) 782495-29-8, Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) 782495-30-1, Copper lithium metaphosphate oxide (Cu0.2Li2.8(PO3)O0.9) 782495-31-2, Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) 782495-32-3, Lithium niobium metaphosphate oxide (Li2.8Nb0.2(PO3)O0.9) 782495-33-4, Lithium molybdenum metaphosphate oxide (Li2.8Mo0.2(PO3)O0.9) 782495-34-5, Lithium ruthenium metaphosphate oxide (Li2.8Ru0.2(PO3)O0.9) 782495-35-6, Lithium silver metaphosphate oxide (Li2.8Ag0.2(PO3)O0.9) 782495-36-7, Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(PO3)O0.9) 782495-37-8, Lithium tungsten metaphosphate oxide (Li2.8W0.2(PO3)O0.9) 782495-38-9, Lithium platinum metaphosphate oxide (Li2.8Pt0.2(PO3)O0.9) 782495-39-0, Gold lithium metaphosphate oxide (Au0.2Li2.8(PO3)O0.9) 782495-40-3, Lithium metaphosphate oxide (Li2.8(PO3)O0.9) 782495-41-4, Lithium tungsten metaphosphate oxide (Li2.8W0.01(PO3)O0.9) 782495-42-5, Lithium tungsten metaphosphate oxide (Li2.8W0.05(PO3)O0.9) 782495-43-6, Lithium tungsten metaphosphate oxide (Li2.8W0.1(PO3)O0.9)

782495-44-7, Lithium tungsten metaphosphate oxide (Li2.8W0.5(PO3)O0.9) 782495-45-8, Lithium tungsten metaphosphate oxide (Li2.8W0.52(PO3)O0.9) 782495-46-9, Lithium tungsten metaphosphate oxide (Li2.8W0.6(PO3)O0.9) 782495-47-0, Lithium vanadium oxide phosphate (Li2.8V0.2O0.4(PO4)) 782495-48-1, Chromium lithium oxide phosphate (Cr0.2Li2.8O0.2(PO4)) 782495-49-2, Lithium manganese oxide phosphate (Li2.8Mn0.2O0.3(PO4)) 782495-50-5, Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) 782495-51-6, Cobalt lithium oxide phosphate (Co0.2Li2.8O0.17(PO4)) 782495-52-7, Lithium nickel oxide phosphate (Li2.8Ni0.2O0.1(PO4)) 782495-53-8, Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) 782495-54-9, Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) 782495-55-0, Lithium niobium oxide phosphate (Li2.8Nb0.2O0.4(PO4)) 782495-56-1, Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) 782495-57-2, Lithium silver phosphate (Li2.8Ag0.2(PO4)) 782495-58-3, Lithium tantalum oxide phosphate (Li2.8Ta0.2O0.4(PO4)) 782495-59-4, Lithium tungsten oxide phosphate (Li2.8W0.2O0.5(PO4)) 782495-60-7, Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) 782495-61-8, Lithium vanadium oxide phosphate (Li3.75V0.25O(PO4)) 782495-62-9, Chromium lithium oxide phosphate (Cr0.25Li3.5O(PO4)) 782495-63-0, Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4)) 782495-64-1, Lithium niobium oxide phosphate (Li3.75Nb0.25O(PO4)) 782495-65-2, Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4)) 782495-66-3, Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4)) 782495-69-6, Lithium tungsten oxide phosphate (Li3.02W0.01O0.04(PO4)) 782495-74-3, Lithium tungsten oxide phosphate (Li5WO4(PO4)) 782495-76-5, Lithium tungsten oxide phosphate (Li7W2O8(PO4))

(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 5 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:824972 HCAPLUS Full-text

DOCUMENT NUMBER: 141:334894

TITLE: Battery electrodes comprising mixed active particles

INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Kelley, Tracy E.

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 40 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040197654	A1	20041007	US 2003-406890 <--	20030403
US 7041239	B2	20060509		
CA 2520876	A1	20041104	CA 2004-2520876 <--	20040322
WO 2004095607	A2	20041104	WO 2004-US8839	20040322

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WO 2004095607 A3 20050922

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1625596 A2 20060215 EP 2004-759733 20040322

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK

CN 1795514 A 20060628 CN 2004-80014147 20040322

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US 20060194112 A1 20060831 US 2006-381602 20060504

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PRIORITY APPLN. INFO.: US 2003-406890 A 20030403

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WO 2004-US8839 W 20040322

US 2006-381602 A2 20060504

ED Entered STN: 08 Oct 2004

AB Electrode active materials comprising two or more groups of particles having differing chemical compns., wherein each group of particles comprises a material selected from: (a) materials of the formula A1aM1b(XY4)cZd ; and (b) materials of the formula A2eM2fOg; and wherein (i) A1 , A2 , and A3 are Li, Na, or K; (ii) M1 and M3 comprise a transition metal; (iv) XY4 a phosphate or similar moiety; and (v) Z is OH, or halogen. In a preferred embodiment, A2eM3fOg is A3hMniO4 having an inner and an outer region, wherein the inner region comprises a cubic spinel manganese oxide, and the outer region comprises a manganese oxide enriched in Mn+4 relative to the inner region. In a preferred embodiment, the compns. also comprise a basic compound

IT 484039-84-1, Cobalt lithium fluoride phosphate CoLi2F(PO4) 484039-86-3, Iron lithium fluoride phosphate FeLi2F(PO4) 484039-88-5, Iron lithium magnesium fluoride phosphate Fe0.9Li2Mg0.1F(PO4) 484039-95-4, Lithium manganese fluoride phosphate Li2MnF(PO4) 771556-75-3 771556-77-5

(battery electrodes comprising mixed active particles)

RN 484039-84-1 HCAPLUS

CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

RN 484039-86-3 HCAPLUS
CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 484039-88-5 HCAPLUS
CN Iron lithium magnesium fluoride phosphate (Fe0.9Li2Mg0.1F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.1	7439-95-4
Li	2	7439-93-2
Fe	0.9	7439-89-6

RN 484039-95-4 HCAPLUS
CN Lithium manganese fluoride phosphate (Li2MnF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2

RN 771556-75-3 HCAPLUS
CN Iron lithium magnesium fluoride phosphate (Fe0.8Li2Mg0.2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.2	7439-95-4
Li	2	7439-93-2
Fe	0.8	7439-89-6

RN 771556-77-5 HCAPLUS
CN Iron lithium magnesium fluoride phosphate (Fe0.95Li2Mg0.05F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.05	7439-95-4
Li	2	7439-93-2

Fe | 0.95 | 7439-89-6

IC ICM H01M004-58
ICS H01M004-50
INCL 429218100; X42-923.11; X42-922.4; X42-922.1; X42-922.3; X42-923.15; X42-923.19; X42-923.195; X25-218.21; X42-923.16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 12031-65-1, Lithium nickel oxide linio2 12162-92-4, Lithium vanadium oxide liv2o5 12190-79-3, Cobalt lithium oxide colio2 12527-46-7, Copper lithium oxide culi2o2 13826-59-0, Lithium manganese phosphate limnpo4 14066-20-7, Dihydrogen phosphate, uses 15365-14-7, Iron lithium phosphate felipo4 39457-42-6, Lithium manganese oxide 131344-56-4, Cobalt lithium nickel oxide 142585-37-3, Copper lithium oxide culio2 143623-49-8, Cobalt lithium nickel oxide Co0.25LiNi0.75O2 193214-24-3, Aluminum cobalt lithium nickel oxide Al0.05Co0.15LiNi0.8O2 349632-85-5, Iron lithium magnesium phosphate Fe0.8LiMg0.2(PO4) 405914-53-6, Cobalt lithium magnesium phosphate Co0.9LiMg0.1(PO4) 484039-84-1, Cobalt lithium fluoride phosphate CoLi2F(PO4) 484039-86-3, Iron lithium fluoride phosphate FeLi2F(PO4) 484039-88-5, Iron lithium magnesium fluoride phosphate Fe0.9Li2Mg0.1F(PO4) 484039-95-4, Lithium manganese fluoride phosphate Li2MnF(PO4) 610271-90-4, Aluminum cobalt iron lithium magnesium manganese phosphate Al0.02Co0.7Fe0.08Li1.02Mg0.05Mn0.12(PO4) 610271-94-8, Aluminum cobalt iron lithium magnesium phosphate Al0.02Co0.8Fe0.1Li1.02Mg0.05(PO4) 610271-97-1, Aluminum cobalt iron lithium magnesium phosphate Al0.02Co0.75Fe0.15Li1.02Mg0.05(PO4) 610272-06-5, Aluminum cobalt iron lithium titanium phosphate Al0.02Co0.8Fe0.1Li1.02Ti0.02(PO4) 610310-97-9, Cobalt iron lithium magnesium titanium phosphate Co0.8Fe0.1LiMg0.05Ti0.02(PO4) 610321-55-6, Cobalt iron lithium magnesium titanium fluoride metaphosphate oxide Co0.8Fe0.1Li1.02Mg0.02Ti0.02F0.02(PO3)O0.98 610321-57-8, Cobalt iron lithium magnesium titanium phosphate Co0.82Fe0.1LiMg0.02Ti0.02(PO4) 610321-60-3, Aluminum cobalt iron lithium magnesium fluoride metaphosphate oxide Al0.02Co0.8Fe0.1LiMg0.05F0.02(PO3)O0.98 610754-69-3, Aluminum calcium cobalt iron lithium fluoride metaphosphate oxide Al0.02Ca0.05Co0.8Fe0.1LiF0.02(PO3)O0.98 632286-77-2, Iron lithium magnesium phosphate Fe0.9LiMg0.1PO4 632286-77-2, Iron lithium magnesium phosphate Fe0.9LiMg0.1(PO4) 643752-34-5, Iron lithium magnesium phosphate Fe0.95LiMg0.05(PO4) 643752-34-5, Iron lithium magnesium phosphate (Fe0.95LiMg0.05(PO4)) 771556-73-1, Aluminum cobalt iron lithium phosphate (Al0.02Co0.85Fe0.05Li1.02(PO4)) 771556-74-2 771556-75-3 771556-77-5
(battery electrodes comprising mixed active particles)
REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:759266 HCAPLUS Full-text
DOCUMENT NUMBER: 141:280353
TITLE: Production of lithium compound phosphate cathodes for secondary lithium ion batteries
INVENTOR(S): Ishizuka, Masayuki; Ono, Koji; Toge, Yoshiyuki; Saito, Mitsumasa
PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259471	A	20040916	JP 2003-45885 <--	20030224
PRIORITY APPLN. INFO.:			JP 2003-45885 <--	20030224

ED Entered STN: 17 Sep 2004

AB The lithium compound phosphates, having olivine-type structure, are produced by a process including steps of (1) spray thermal decomposition of solns. or suspensions containing Li, metals excluding Li, and P, and (2) firing the resultant decomposition products. The phosphates may be expressed by LixAyPO4 (A = Cr, Mn, Fe, Co, Ni, Cu; 0 < x < 2; 0 < y ≤ 1). In the production, elec. conductive substances and/or their precursors may be added to the solns./suspensions. The cathodes can be economically produced, and secondary lithium batteries employing the cathodes show high discharge capacity.

IT 757954-84-0, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))
757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4))
757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

RN 757954-84-0 HCAPLUS
CN Chromium lithium phosphate (Cr0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cr	0 - 1	7440-47-3
Li	0 - 2	7439-93-2

RN 757954-86-2 HCAPLUS
CN Lithium manganese phosphate (Li0-2Mn0-1(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0 - 1	7439-96-5
Li	0 - 2	7439-93-2

RN 757954-88-4 HCAPLUS
CN Lithium nickel phosphate (Li0-2Ni0-1(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0 - 1	7440-02-0
Li	0 - 2	7439-93-2

RN 757954-90-8 HCAPLUS
CN Copper lithium phosphate (Cu0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O4P	1	14265-44-2
Cu	0 - 1	7440-50-8
Li	0 - 2	7439-93-2

IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
RN 757954-80-6 HCAPLUS
CN Cobalt lithium phosphate (Co0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0 - 1	7440-48-4
Li	0 - 2	7439-93-2

RN 757954-82-8 HCAPLUS
CN Iron lithium phosphate (Fe0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IC ICM H01M004-58
ICS C01B025-45; H01M004-62; H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 757954-84-0, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))
757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4))
757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

L25 ANSWER 7 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:759265 HCAPLUS Full-text
DOCUMENT NUMBER: 141:280352
TITLE: Lithium transition metal phosphate cathodes for lithium ion batteries
INVENTOR(S): Ishizuka, Masayuki; Ono, Koji; Yamada, Satoshi; Toge, Yoshiyuki; Saito, Mitsumasa
PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259470	A	20040916	JP 2003-45884 <--	20030224
PRIORITY APPLN. INFO.:			JP 2003-45884 <--	20030224

ED Entered STN: 17 Sep 2004

AB The cathodes are expressed by olivine-type LixAyPO4 (A = Cr, Mn, Fe, Co, Ni, Cu; 0 < x < 2; 0 < y ≤ 1) with crystallite diameter of ≤35 nm. The cathodes can be economically produced, and secondary lithium batteries employing the cathodes show high discharge capacity.

IT 757954-84-0, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))
757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4))
757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
(cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)

RN 757954-84-0 HCAPLUS
CN Chromium lithium phosphate (Cr0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cr	0 - 1	7440-47-3
Li	0 - 2	7439-93-2

RN 757954-86-2 HCAPLUS
CN Lithium manganese phosphate (Li0-2Mn0-1(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0 - 1	7439-96-5
Li	0 - 2	7439-93-2

RN 757954-88-4 HCAPLUS
CN Lithium nickel phosphate (Li0-2Ni0-1(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0 - 1	7440-02-0
Li	0 - 2	7439-93-2

RN 757954-90-8 HCAPLUS
CN Copper lithium phosphate (Cu0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0 - 1	7440-50-8
Li	0 - 2	7439-93-2

IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; lithium transition metal phosphate cathodes for lithium

ion batteries)
RN 757954-80-6 HCAPLUS
CN Cobalt lithium phosphate (Co0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0 - 1	7440-48-4
Li	0 - 2	7439-93-2

RN 757954-82-8 HCAPLUS
CN Iron lithium phosphate (Fe0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IC ICM H01M004-58
ICS C01B025-45; H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 757954-84-0, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))
757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4))
757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
(cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)
IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)

L25 ANSWER 8 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:632469 HCAPLUS Full-text
DOCUMENT NUMBER: 141:176832
TITLE: Nonaqueous electrolyte lithium ion secondary battery containing lithium-based composite metal oxide for improved discharge capacity and thermal stability
INVENTOR(S): Kubo, Koichi
PATENT ASSIGNEE(S): Toshiba Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004220801	A	20040805	JP 2003-3291 <--	20030109
JP 3887317	B2	20070228		
PRIORITY APPLN. INFO.:			JP 2003-3291 <--	20030109

ED Entered STN: 06 Aug 2004

AB Disclosed is the nonaq. electrolyte lithium ion secondary battery comprising (a) a pos. electrode containing a metal oxide Li2-xM1-yM'yXzAO4 (M = Ti, Nb, etc.; M' = V, Cr, Mn, etc.; X = O, F; A = Si, Ge, P, S; 0≤ x ≤2; 0≤ y ≤0.5; and 0.5≤ z ≤1.5) having the tetragonal crystal structure, (b) a neg. electrode, and (c) a nonaq. electrolyte.

IT 732298-51-0, Lithium molybdenum oxide phosphate (Li2MoO(PO4))
732298-52-1, Lithium niobium oxide phosphate (Li2NbO(PO4))
732298-53-2, Lithium tantalum oxide phosphate (Li2TaO(PO4))
732298-54-3, Lithium tungsten oxide phosphate (Li2WO(PO4))
732298-55-4, Iron lithium molybdenum oxide phosphate (Fe0.33Li2Mo0.67O(PO4)) 732298-58-7 732298-59-8, Iron lithium tantalum fluoride phosphate (Fe0.5Li2Ta0.5F(PO4)) 732298-60-1 732298-61-2 732298-62-3
732298-66-7, Lithium molybdenum oxide phosphate (Li2MoO1.5(PO4)) 732298-67-8, Lithium titanium oxide phosphate (Li2TiO0.5(PO4))
(pos. electrode of nonaq. electrolyte lithium ion secondary battery)

RN 732298-51-0 HCAPLUS
CN Lithium molybdenum oxide phosphate (Li2MoO(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mo	1	7439-98-7
Li	2	7439-93-2

RN 732298-52-1 HCAPLUS
CN Lithium niobium oxide phosphate (Li2NbO(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Nb	1	7440-03-1
Li	2	7439-93-2

RN 732298-53-2 HCAPLUS
CN Lithium tantalum oxide phosphate (Li2TaO(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ta	1	7440-25-7
Li	2	7439-93-2

RN 732298-54-3 HCAPLUS
CN Lithium tungsten oxide phosphate (Li2WO(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
W	1	7440-33-7

Li	2	7439-93-2

RN 732298-55-4 HCAPLUS
CN Iron lithium molybdenum oxide phosphate (Fe0.33Li2Mo0.67O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mo	0.67	7439-98-7
Li	2	7439-93-2
Fe	0.33	7439-89-6

RN 732298-58-7 HCAPLUS
CN Lithium molybdenum ruthenium oxide phosphate (Li2Mo0.9Ru0.1O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ru	0.1	7440-18-8
Mo	0.9	7439-98-7
Li	2	7439-93-2

RN 732298-59-8 HCAPLUS
CN Iron lithium tantalum fluoride phosphate (Fe0.5Li2Ta0.5F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Ta	0.5	7440-25-7
Li	2	7439-93-2
Fe	0.5	7439-89-6

RN 732298-60-1 HCAPLUS
CN Lithium molybdenum titanium oxide phosphate (Li2Mo0.5Ti0.5O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ti	0.5	7440-32-6
Mo	0.5	7439-98-7
Li	2	7439-93-2

RN 732298-61-2 HCAPLUS
CN Lithium molybdenum rhodium oxide phosphate (Li2Mo0.9Rh0.1O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	1	17778-80-2
O4P	1	14265-44-2
Rh	0.1	7440-16-6
Mo	0.9	7439-98-7
Li	2	7439-93-2

RN 732298-62-3 HCAPLUS
CN Lithium molybdenum niobium oxide phosphate (Li2Mo0.5Nb0.5O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Nb	0.5	7440-03-1
Mo	0.5	7439-98-7
Li	2	7439-93-2

RN 732298-66-7 HCAPLUS
CN Lithium molybdenum oxide phosphate (Li2MoO1.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.5	17778-80-2
O4P	1	14265-44-2
Mo	1	7439-98-7
Li	2	7439-93-2

RN 732298-67-8 HCAPLUS
CN Lithium titanium oxide phosphate (Li2TiO0.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.5	17778-80-2
O4P	1	14265-44-2
Ti	1	7440-32-6
Li	2	7439-93-2

IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 530740-14-8, Molybdenum oxide phosphate (Mo2O3(PO4)2)
732298-51-0, Lithium molybdenum oxide phosphate (Li2MoO(PO4))
732298-52-1, Lithium niobium oxide phosphate (Li2NbO(PO4))
732298-53-2, Lithium tantalum oxide phosphate (Li2TaO(PO4))
732298-54-3, Lithium tungsten oxide phosphate (Li2WO(PO4))
732298-55-4, Iron lithium molybdenum oxide phosphate (Fe0.33Li2Mo0.67O(PO4)) 732298-56-5, Germanium lithium molybdenum oxide (GeLi2MoO5) 732298-58-7 732298-59-8, Iron lithium tantalum fluoride phosphate (Fe0.5Li2Ta0.5F(PO4)) 732298-60-1 732298-61-2 732298-62-3
732298-63-4, Lithium titanium oxide sulfate (Li2TiO(SO4))
732298-64-5, Lithium titanium vanadium oxide sulfate (Li2Ti0.5V0.5O(SO4)) 732298-65-6, Lithium niobium vanadium oxide sulfate (Li2Nb0.5V0.5O(SO4)) 732298-66-7, Lithium molybdenum

oxide phosphate (Li2MoO1.5(PO4)) 732298-67-8, Lithium titanium oxide phosphate (Li2TiO0.5(PO4)) 732298-68-9, Lithium tungsten oxide silicate (Li2WO(SiO4))
(pos. electrode of nonaq. electrolyte lithium ion secondary battery)

L25 ANSWER 9 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:546642 HCAPLUS Full-text
DOCUMENT NUMBER: 141:91814
TITLE: Method of preparation of battery electrode active material
INVENTOR(S): Adamson, George; Barker, Jeremy; Ceder, Gerbrand; Dong, Ming; Morgan, Dane; Saidi, Yazid M.
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: PCT Int. Appl., 71 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004057691	A1	20040708	WO 2003-US40930 <--	20031219
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2455540	A1	20040619	CA 2003-2455540 <--	20031219
US 20040131939	A1	20040708	US 2003-741257 <--	20031219
AU 2003297466	A1	20040714	AU 2003-297466 <--	20031219
EP 1500154	A1	20050126	EP 2003-793455 <--	20031219
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1692510	A	20051102	CN 2003-80100192 <--	20031219
JP 2006511038	T	20060330	JP 2004-544174 <--	20031219
US 20060083990	A1	20060420	US 2005-291298 <--	20051201

PRIORITY APPLN. INFO.:			
	US 2002-435144P <--	P	20021219
	US 2003-741257 <--	A3	20031219
	WO 2003-US40930 <--	W	20031219

ED Entered STN: 08 Jul 2004

AB The invention provides an electrochem. cell which includes a first electrode and a second electrode which is a counter electrode to the first electrode, and an electrolyte material interposed there between. The first electrode includes an alkali metal phosphorous compound doped with an element having a valence state greater than that of the alkali metal.

IT 714248-83-6P, Lithium vanadium phosphate (Li2.99V2(PO4)3)
714248-85-8P, Lithium vanadium phosphate (Li2.98V2(PO4)3)
(Nb-doped; method of preparation of battery electrode active material)

RN 714248-83-6 HCAPLUS

CN Lithium vanadium phosphate (Li2.99V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Li	2.99	7439-93-2

RN 714248-85-8 HCAPLUS

CN Lithium vanadium phosphate (Li2.98V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Li	2.98	7439-93-2

(Zr-doped; method of prepn. of battery electrode active material

IT 714248-79-0P, Lithium vanadium zirconium phosphate (Li2.96V2Zr0.01(PO4)3) 714248-80-3P, Lithium vanadium zirconium phosphate (Li2.9V2Zr0.02(PO4)3) 714248-81-4P, Lithium vanadium zirconium phosphate (Li2.8V2Zr0.05(PO4)3) 714248-86-9P, Lithium niobium vanadium phosphate (Li2.97Nb0.01V2(PO4)3) 714248-87-0P, Lithium niobium vanadium phosphate (Li2.96Nb0.01V2(PO4)3) 714248-88-1P, Lithium niobium vanadium phosphate (Li2.95Nb0.01V2(PO4)3) 714248-90-5P, Lithium magnesium vanadium phosphate (Li2.98Mg0.01V2(PO4)3) 714248-91-6P, Lithium magnesium vanadium phosphate (Li2.94Mg0.03V2(PO4)3) 714248-93-8P, Lithium magnesium vanadium phosphate (Li2.9Mg0.05V2(PO4)3) 714248-95-0P, Lithium magnesium vanadium phosphate (Li2.8Mg0.1V2(PO4)3)
(method of preparation of battery electrode active material)

RN 714248-79-0 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li2.96V2Zr0.01(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.01	7440-67-7
V	2	7440-62-2
Li	2.96	7439-93-2

RN 714248-80-3 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li2.9V2Zr0.02(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.02	7440-67-7
V	2	7440-62-2
Li	2.9	7439-93-2

RN 714248-81-4 HCAPLUS
CN Lithium vanadium zirconium phosphate (Li2.8V2Zr0.05(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.05	7440-67-7
V	2	7440-62-2
Li	2.8	7439-93-2

RN 714248-86-9 HCAPLUS
CN Lithium niobium vanadium phosphate (Li2.97Nb0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Nb	0.01	7440-03-1
Li	2.97	7439-93-2

RN 714248-87-0 HCAPLUS
CN Lithium niobium vanadium phosphate (Li2.96Nb0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Nb	0.01	7440-03-1
Li	2.96	7439-93-2

RN 714248-88-1 HCAPLUS
CN Lithium niobium vanadium phosphate (Li2.95Nb0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Nb	0.01	7440-03-1
Li	2.95	7439-93-2

RN 714248-90-5 HCAPLUS
CN Lithium magnesium vanadium phosphate (Li2.98Mg0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.01	7439-95-4
Li	2.98	7439-93-2

RN 714248-91-6 HCAPLUS
CN Lithium magnesium vanadium phosphate (Li2.94Mg0.03V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.03	7439-95-4
Li	2.94	7439-93-2

RN 714248-93-8 HCAPLUS
CN Lithium magnesium vanadium phosphate (Li2.9Mg0.05V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.05	7439-95-4
Li	2.9	7439-93-2

RN 714248-95-0 HCAPLUS
CN Lithium magnesium vanadium phosphate (Li2.8Mg0.1V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.1	7439-95-4
Li	2.8	7439-93-2

IC ICM H01M004-48
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 714248-83-6P, Lithium vanadium phosphate (Li2.99V2(PO4)3)
714248-85-8P, Lithium vanadium phosphate (Li2.98V2(PO4)3)
714249-02-2P, Cobalt lithium phosphate (CoLi0.99(PO4)) 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4))
(Nb-doped; method of preparation of battery electrode active material)
IT 714248-75-6P, Lithium manganese phosphate (Li0.98Mn(PO4))
714248-85-8P, Lithium vanadium phosphate (Li2.98V2(PO4)3)
714248-97-2P, Cobalt lithium phosphate (CoLi0.98(PO4)) 714249-17-9P, Iron lithium phosphate (FeLi0.98(PO4))
(Zr-doped; method of preparation of battery electrode active material)
IT 15365-14-7P, Iron lithium phosphate FeLi(PO4) 554453-37-1P, Iron lithium zirconium phosphate 554453-39-3P, Iron lithium niobium phosphate 554453-42-8P, Iron lithium magnesium phosphate

714248-65-4P 714248-66-5P, Lithium manganese phosphate (Li0.99Mn(PO4)) 714248-67-6P, Lithium manganese niobium phosphate (Li0.97MnNb0.01(PO4)) 714248-68-7P, Lithium manganese niobium phosphate (Li0.96MnNb0.01(PO4)) 714248-69-8P 714248-70-1P, Lithium magnesium manganese phosphate (Li0.98Mg0.01Mn(PO4)) 714248-71-2P, Lithium magnesium manganese phosphate (Li0.96Mg0.02Mn(PO4)) 714248-72-3P, Lithium magnesium manganese phosphate (Li0.94Mg0.03Mn(PO4)) 714248-73-4P, Lithium magnesium manganese phosphate (Li0.98Mg0.05Mn0.96(PO4)) 714248-74-5P 714248-76-7P, Lithium manganese zirconium phosphate (Li0.96MnZr0.01(PO4)) 714248-77-8P 714248-79-0P, Lithium vanadium zirconium phosphate (Li2.96V2Zr0.01(PO4)3) 714248-80-3P, Lithium vanadium zirconium phosphate (Li2.9V2Zr0.02(PO4)3) 714248-81-4P, Lithium vanadium zirconium phosphate (Li2.8V2Zr0.05(PO4)3) 714248-82-5P 714248-86-9P, Lithium niobium vanadium phosphate (Li2.97Nb0.01V2(PO4)3) 714248-87-0P , Lithium niobium vanadium phosphate (Li2.96Nb0.01V2(PO4)3) 714248-88-1P, Lithium niobium vanadium phosphate (Li2.95Nb0.01V2(PO4)3) 714248-89-2P 714248-90-5P, Lithium magnesium vanadium phosphate (Li2.98Mg0.01V2(PO4)3) 714248-91-6P, Lithium magnesium vanadium phosphate (Li2.94Mg0.03V2(PO4)3) 714248-93-8P, Lithium magnesium vanadium phosphate (Li2.9Mg0.05V2(PO4)3) 714248-95-0P, Lithium magnesium vanadium phosphate (Li2.8Mg0.1V2(PO4)3) 714248-96-1P 714248-99-4P, Cobalt lithium zirconium phosphate (CoLi0.96Zr0.01(PO4)) 714249-00-0P 714249-04-4P, Cobalt lithium niobium phosphate (CoLi0.97Nb0.01(PO4)) 714249-07-7P, Cobalt lithium niobium phosphate (CoLi0.96Nb0.01(PO4)) 714249-08-8P 714249-10-2P, Cobalt lithium magnesium phosphate (CoLi0.98Mg0.01(PO4)) 714249-11-3P, Cobalt lithium magnesium phosphate (CoLi0.96Mg0.02(PO4)) 714249-13-5P, Cobalt lithium magnesium phosphate (CoLi0.94Mg0.03(PO4)) 714249-15-7P, Cobalt lithium magnesium phosphate (Co0.86Li0.98Mg0.05(PO4)) 714249-19-1P, Iron lithium zirconium phosphate (FeLi0.96Zr0.01(PO4)) 714249-22-6P, Iron lithium niobium phosphate (FeLi0.97Nb0.01(PO4)) 714249-23-7P, Iron lithium niobium phosphate (FeLi0.96Nb0.01(PO4)) 714249-25-9P, Iron lithium magnesium phosphate (FeLi0.98Mg0.01(PO4)) 714249-27-1P, Iron lithium magnesium phosphate (Fe0.96LiMg0.04(PO4)) 714249-28-2P, Iron lithium magnesium phosphate (Fe0.96Li0.98Mg0.05(PO4))
(method of preparation of battery electrode active material)

L25 ANSWER 10 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:999003 HCAPLUS Full-text
DOCUMENT NUMBER: 140:324022
TITLE: Structure and battery properties of LiCoPO4 and Li2CoPO4F
AUTHOR(S): Okada, Shigeto; Ueno, Mizuki; Uebo, Yasushi; Yamaki, Jun-ichi
CORPORATE SOURCE: Institute of Advanced Material Study, Kyushu University, Kasuga, 816-8580, Japan
SOURCE: JAERI-Review (2003), 2003-019, Activity Report on the Utilization of Research Reactors, 322-323
CODEN: JERVE9
DOCUMENT TYPE: Report
LANGUAGE: English
ED Entered STN: 23 Dec 2003
AB The structure of ordered phospho-olivine LiCoPO4 and fluoride phosphate Li2CoPO4F were investigated by neutron diffraction, and the cathode properties were compared using coin-type cells in a nonaq. electrolyte. Interat.

distances, ionic radii, and crystallog. data of the 2 compds. are given. The quasi open circuit voltage charge-discharge profiles showed that Li2CoPO4F is a new 5-V class cathode like LiCoPO4, and the open-circuit voltage is higher than that of LiCoPO4.

IT 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))
(structure and battery properties of LiCoPO4 and Li2CoPO4F)

RN 484039-84-1 HCAPLUS

CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 75

IT 13824-63-0, Cobalt lithium phosphate (CoLiPO4) 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))
(structure and battery properties of LiCoPO4 and Li2CoPO4F)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 11 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:796193 HCAPLUS Full-text

DOCUMENT NUMBER: 139:310049

TITLE: Batteries comprising alkali-transition metal phosphates and preferred electrolytes

INVENTOR(S): Pugh, James; Saidi, Mohammed Y.; Huang, Haitao

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 24 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030190527	A1	20031009	US 2002-116276 <--	20020403
CA 2479790	A1	20031016	CA 2003-2479790 <--	20030327
WO 2003085757	A1	20031016	WO 2003-US9634 <--	20030327

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003224801	A1	20031020	AU 2003-224801 <--	20030327
EP 1490917	A1	20041229	EP 2003-721492 <--	20030327
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005522009	T	20050721	JP 2003-582838 <--	20030327
CN 1650450	A	20050803	CN 2003-810033 <--	20030327
US 20050181283	A1	20050818	US 2005-80605 <--	20050315
PRIORITY APPLN. INFO.:			US 2002-116276 <--	A 20020403
			WO 2003-US9634 <--	W 20030327

ED Entered STN: 10 Oct 2003

AB Lithium batteries comprising: (a) an electrode comprising a material AaMb(XY4)cZd , wherein (i) A is an alkali metal and 0<a≤9; (ii) M comprises a transition metal, and 1≤b≤3; (iii) XY4 is X'O4-x Y'x, X'O4-yY'2y, X''S4, or mixts. thereof, where X' is P, As, Sb, Si, Ge, V, S, or mixts. thereof; X'' is P, As, Sb, Si, Ge, V, or mixts. thereof; Y' is halogen, S, N, or mixts. thereof; 0≤x<3; and 0<y≤2; and 0<c≤3; and (iv) Z is OH, halogen, or mixts. thereof, and 0≤d≤6; and (b) a counter-electrode; and (c) an electrolyte comprising an alkyl and/or alkylene carbonate and a cyclic ester. Preferably, M addnl. comprises at least one non-transition metal. Preferred embodiments include those having an olivine structure, where c = 1, and those having a NASICON structure, where c = 3.

IT 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-28-0P
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

RN 484040-22-4 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

RN 484040-28-0 HCAPLUS

CN Aluminum cobalt lithium magnesium fluoride phosphate (Al0.02Co0.9Li2.02Mg0.05F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	0.9	7440-48-4
Mg	0.05	7439-95-4
Li	2.02	7439-93-2
Al	0.02	7429-90-5

IC ICM H01M004-58

INCL 429231900; 429231950; 429221000; 429223000; 429231500; 429224000;

429231600
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT 477779-87-6P, Sodium vanadium fluoride phosphate NaVF(PO4) 484040-01-9P, Iron lithium magnesium fluoride phosphate Fe0.9Li1.25Mg0.1F0.25(PO4) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-28-0P 610272-07-6P 610311-01-8P
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

L25 ANSWER 12 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:628392 HCAPLUS Full-text
DOCUMENT NUMBER: 139:166947
TITLE: Cathode active mass, cathode, secondary nonaqueous-electrolyte battery, and method for its charging and discharging
INVENTOR(S): Okada, Shigeto; Yamaki, Junichi; Kamibo, Yasushi; Ueno, Mizuki
PATENT ASSIGNEE(S): Sangaku Renkei Kiko Kyushu Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003229126	A	20030815	JP 2002-24976 <--	20020201
JP 3624205	B2	20050302		
PRIORITY APPLN. INFO.:			JP 2002-24976 <--	20020201

ED Entered STN: 15 Aug 2003
AB The title cathode active mass contains a lithium phosphate fluoride compound Li2-XMPO4F (M is a transition metal; X = 0-2). The title battery, equipped with a cathode containing the above active mass, is charged and discharged by using III/II and IV/III valence oxidation-reduction reaction of the transition metal. The battery provides high discharge voltage and energy d.
IT 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))
(cathode containing lithium transition metal phosphate fluoride for nonaq. battery)
RN 484039-84-1 HCAPLUS
CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

IC ICM H01M004-58
ICS H01M004-02; H01M004-38; H01M004-46; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))

(cathode containing lithium transition metal phosphate fluoride for nonaq. battery)

L25 ANSWER 13 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:437518 HCAPLUS Full-text
DOCUMENT NUMBER: 139:278965
TITLE: Experimental and computational study of the structure and electrochemical properties of monoclinic LixM2(PO4)3 compounds
AUTHOR(S): Morgan, D.; Ceder, G.; Saidi, M. Y.; Barker, J.; Swoyer, J.; Huang, H.; Adamson, G.
CORPORATE SOURCE: Computational Modeling Consultants, Wellesley, MA, USA
SOURCE: Journal of Power Sources (2003), 119-121, 755-759
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 09 Jun 2003
AB This paper presents a combined computational and exptl. study of the structural and electrochem. properties of monoclinic LixM2(PO4)3 (with a focus on M=V). The voltage curve for x=0-3 Li is measured exptl. and calculated Features of the voltage curve are understood as emerging from site energetics, Li ordering, and redox couples. These features are found to be largely independent of alloying and a simple additive model is proposed to analyze the voltage curve for different cation substitutions. The model is shown to be very useful for understanding exptl. results for a number of substituted compds.
IT 204653-31-6, Lithium titanium vanadium phosphate Li3TiV(PO4)3
204653-32-7, Aluminum lithium vanadium phosphate AlLi3V(PO4)3
(exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
RN 204653-31-6 HCAPLUS
CN Lithium titanium vanadium phosphate (Li3TiV(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Ti	1	7440-32-6
Li	3	7439-93-2

RN 204653-32-7 HCAPLUS
CN Aluminum lithium vanadium phosphate (AlLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
IT 204653-31-6, Lithium titanium vanadium phosphate Li3TiV(PO4)3

204653-32-7, Aluminum lithium vanadium phosphate AlLi3V(PO4)3
605661-90-3, Lithium vanadium phosphate (Li0.25V2(PO4)3)
605661-91-4, Iron lithium phosphate (Fe2Li0.25(PO4)3) 605661-92-5
605661-93-6
(exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 14 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:389054 HCAPLUS Full-text
DOCUMENT NUMBER: 139:278891
TITLE: New iron (III) hydroxyl-phosphate with rod-packing structure as intercalation materials
AUTHOR(S): Song, Yanning; Zavalij, Peter Y.; Whittingham, M. Stanley
CORPORATE SOURCE: Department of Chemistry and Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902-6016, USA
SOURCE: Materials Research Society Symposium Proceedings (2003), 756(Solid State Ionics--2002), 249-253
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 21 May 2003
AB A new Fe hydroxyl-phosphate, H2Fe14/3(PO4)4(OH)4 was synthesized under hydrothermal conditions. In this compound, perpendicular chains formed by the face-sharing FeO6 form rod-packing structures. Only .apprx.60% of the chain sites are occupied by Fe atoms, other metals such as Mn, Ni, and Zn, can be incorporated into the chain either by filling in the vacancies and/or replacing some of the Fe atoms. Reversible insertion and extraction of Li into this compound shows it to be an excellent cathode material. At c.d. of 0.1 mA/cm2, 90% of the theor. capacity of 176 mA-h/g can be obtained. The capacity was reduced to .apprx.70% for a 10-fold increase of c.d. The electrochem. behavior is attributed to the 3-dimensional rod packing structure where Li can move freely even at high current densities inside the 3-dimensional framework without altering the host structure. Two of the protons in the lattice may be exchanged by Li yielding Li2Fe14/3(PO4)4(OH)4. These Li atoms are not removable in electrochem. cycling and similar electrochem. properties were found for these 2 compds., suggesting an ion-exchange process for the lithiation.
IT 605685-55-0P, Iron lithium hydroxide phosphate (Fe7Li3(OH)6(PO4)6)
(iron(III) hydroxyl-phosphates with rod-packing structures as cathodes for lithium batteries)
RN 605685-55-0 HCAPLUS
CN Iron lithium hydroxide phosphate (Fe7Li3(OH)6(PO4)6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	6	14280-30-9
O4P	6	14265-44-2
Li	3	7439-93-2
Fe	7	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 78
IT 605685-54-9P, Iron hydroxide phosphate (Fe7(OH)6(HPO4)3(PO4)3)
605685-55-0P, Iron lithium hydroxide phosphate (Fe7Li3(OH)6(PO4)6)
(iron(III) hydroxyl-phosphates with rod-packing structures as cathodes for lithium batteries)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 15 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:97868 HCAPLUS Full-text
DOCUMENT NUMBER: 138:140078
TITLE: Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffrey L.
PATENT ASSIGNEE(S): Valence Technology Inc., UK
SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U.S. 6,387,568.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030027049	A1	20030206	US 2001-14822 <--	20011026
US 6777132	B2	20040817		
US 6387568	B1	20020514	US 2000-559861 <--	20000427
AT 317157	T	20060215	AT 2001-916649 <--	20010314
TW 503596	B	20020921	TW 2001-90109979 <--	20010426
US 20030013019	A1	20030116	US 2001-45685 <--	20011107
US 6964827	B2	20051115		
US 20020168573	A1	20021114	US 2002-133091 <--	20020426
US 6855462	B2	20050215		
CA 2463872	A1	20030508	CA 2002-2463872 <--	20021018
WO 2003038930	A2	20030508	WO 2002-US33510 <--	20021018
WO 2003038930	A3	20040422		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR,

BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002337911	A1	20030512	AU 2002-337911 <--	20021018
EP 1444744	A2	20040811	EP 2002-773814 <--	20021018
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CN 1659728	A	20050824	CN 2002-821019 <--	20021018
JP 2006516172	T	20060622	JP 2003-541083 <--	20021018
US 20040265695	A1	20041230	US 2004-870135 <--	20040616
US 7214448	B2	20070508		
US 20060014078	A1	20060119	US 2005-223082 <--	20050909
US 7270915	B2	20070918		
US 20070009800	A1	20070111	US 2006-531824 <--	20060914
US 20070190425	A1	20070816	US 2007-734678 <--	20070412

PRIORITY APPLN. INFO.:	US 2000-559861 <--	A2	20000427
	US 2001-14822 <--	A2	20011026
	US 2001-45685 <--	A3	20011107
	WO 2002-US33510 <--	W	20021018
	US 2004-870135	A2	20040616

ED Entered STN: 07 Feb 2003

AB An electroactive material comprises: AaMb(XY4)cZd, wherein (a) A is selected from the group consisting of Li, Na, and/or K, and a = 0-8; (b) M is ≥1 metal, comprising ≥1 metal which is capable of undergoing oxidation to a higher valence state, and b = 1-3; (c) XY4 is selected from the group consisting of X'O4-xY'x, X'O4-yY'2y, X''S4, and mixts. thereof, where X' is P, As, Sb, Si, and/or Ge; X'' is P, As, Sb, Si, and/or Ge; Y' is halogen, x = 0-3; and y = 0-4; and c = 0-3; (d) Z is OH and/or halogen, d = 0-6; and wherein M, X, Y, Z, a, b, c, d, x, and y are selected so as to maintain the electroneutrality of the compound Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a ≤1 and c=1, those where a=2 and c=1, and those where a≥3 and c=3. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

IT 484039-84-1P, Cobalt lithium fluoride phosphate (CoLi2F(PO4))
484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
484039-88-5P 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-14-4P, Iron lithium fluoride phosphate (Fe2Li4F(PO4)3)) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3))
484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-27-9P 484040-28-0P
(alkali/transition metal halo- and hydroxy-phosphates and related

electrode active materials)

RN 484039-84-1 HCAPLUS
CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

RN 484039-86-3 HCAPLUS
CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 484039-88-5 HCAPLUS
CN Iron lithium magnesium fluoride phosphate (Fe0.9Li2Mg0.1F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.1	7439-95-4
Li	2	7439-93-2
Fe	0.9	7439-89-6

RN 484039-91-0 HCAPLUS
CN Lithium nickel fluoride phosphate (Li2NiF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Ni	1	7440-02-0
Li	2	7439-93-2

RN 484039-95-4 HCAPLUS
CN Lithium manganese fluoride phosphate (Li2MnF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2

RN 484039-97-6 HCAPLUS
CN Copper lithium fluoride phosphate (CuLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Cu	1	7440-50-8
Li	2	7439-93-2

RN 484040-14-4 HCAPLUS
CN Iron lithium fluoride phosphate (Fe2Li4F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
Li	4	7439-93-2
Fe	2	7439-89-6

RN 484040-15-5 HCAPLUS
CN Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	4	7439-93-2

RN 484040-20-2 HCAPLUS
CN Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	2	14762-94-8
O4P	3	14265-44-2
Mn	2	7439-96-5
Li	5	7439-93-2

RN 484040-22-4 HCAPLUS
CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

RN 484040-27-9 HCAPLUS
CN Aluminum antimony lithium vanadium fluoride oxide phosphate (AlSb0.5Li4VFO2(PO4)0.25) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	2	17778-80-2
F	1	14762-94-8
O4P	0.25	14265-44-2
V	1	7440-62-2
Sb	0.5	7440-36-0
Li	4	7439-93-2
Al	1	7429-90-5

RN 484040-28-0 HCAPLUS
CN Aluminum cobalt lithium magnesium fluoride phosphate (Al0.02Co0.9Li2.02Mg0.05F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	0.9	7440-48-4
Mg	0.05	7439-95-4
Li	2.02	7439-93-2
Al	0.02	7429-90-5

IC ICM H01M004-58
ICS C01B017-98; C01B025-10; C01B033-08
INCL 429231950; 429231900; 429221000; 429223000; 429224000; 429220000; 429231500; 429222000; 423332000; 423341000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT 52934-02-8P, Cobalt lithium fluoride phosphate 52934-08-4P, Lithium nickel fluoride phosphate 257892-19-6P, Sodium vanadium fluoride phosphate (Na3V2F3(PO4)2) 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 477779-89-8P, Lithium sodium vanadiumfluoride phosphate (Li0.95Na0.05VF(PO4)) 484039-84-1P, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4)) 484039-88-5P 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, Iron lithium fluoride phosphate 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-01-9P, Iron lithium magnesium fluoride phosphate (Fe0.9Li1.25Mg0.1F0.25(PO4)) 484040-04-2P, Sodium vanadium fluoride phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO4)) 484040-12-2P, Lithium sodium vanadiumfluoride phosphate (Li0.1Na0.9VF(PO4)) 484040-13-3P, Sodium vanadium hydroxide phosphate NaVOHPO4 484040-14-4P, Iron lithium fluoride phosphate (Fe2Li4F(PO4)3)) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3)) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-25-7P, Chromium lithium sodium fluoride phosphate silicate (CrLiNa0.2F(PO4)0.8(SiO4)0.2) 484040-27-9P 484040-28-0P 493025-03-9P, Lithium manganese fluoride phosphate 493025-04-0P, Copper lithium fluoride phosphate
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)
REFERENCE COUNT: 134 THERE ARE 134 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L25 ANSWER 16 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:42884 HCAPLUS Full-text
DOCUMENT NUMBER: 138:92874
TITLE: Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffery L.
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U. S. 6,387,568.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030013019	A1	20030116	US 2001-45685 <--	20011107
US 6964827	B2	20051115		
US 6387568	B1	20020514	US 2000-559861 <--	20000427
US 20030027049	A1	20030206	US 2001-14822 <--	20011026
US 6777132	B2	20040817		
US 20050142056	A1	20050630	US 2005-905649 <--	20050114
US 7261977	B2	20070828		
US 20060014078	A1	20060119	US 2005-223082 <--	20050909
US 7270915	B2	20070918		

PRIORITY APPLN. INFO.: US 2000-559861 A2 20000427 <--
US 2001-14822 A2 20011026 <--
US 2001-45685 A1 20011107 <--
US 2002-133091 A1 20020426 <--

ED Entered STN: 17 Jan 2003

AB Electrode active materials comprise lithium or other alkali metals, a transition metal, a phosphate or similar moiety, and a halogen or hydroxyl moiety. Such electrode actives include those of the formula: AaMb(XY4)cZd wherein (a) A is selected from the group consisting of Li, Na, K, and mixts. thereof, and 0<a≤6; (b) M comprises one or more metals, comprising at least one metal which is capable of undergoing oxidation to a higher valence state, and 1≤b≤3; (c) XY4 is selected from the group consisting of X'O4-xY'Xx, X'O4-yY'2y , X''S4, and mixts. thereof, where X' is P, As, Sb, Si, Ge, S, and mixts. thereof; X'' is P, As, Sb, Si, Ge and mixts. thereof; Y' is halogen; 0≤x<3; and 0<y<4; and 0<c≤3; (d) Z is OH, halogen, or mixts. thereof, and 0<d≤6; and wherein M, X, Y, Z, a, b, c, d, x and y are selected so as to maintain electroneutrality of the compound In a preferred embodiment, M comprises two or more transition metals from Groups 4 to 11 of the Periodic Table. In another preferred embodiment, M comprises M'1-mM''m, where M' is at least one transition metal from Groups 4 to 11 of the Periodic Table; M'' is

at least one element from Groups 2, 3, 12, 13, or 14 of the Periodic Table, and 0<m<1. Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a≤1 and c=1, those where a=2 and c=1, and those where a≥3 and c=3. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

IT 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))
484039-86-3, Iron lithium fluoride phosphate (FeLi2F(PO4))
484039-88-5
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

RN 484039-84-1 HCAPLUS
CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

RN 484039-86-3 HCAPLUS
CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 484039-88-5 HCAPLUS
CN Iron lithium magnesium fluoride phosphate (Fe0.9Li2Mg0.1F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.1	7439-95-4
Li	2	7439-93-2
Fe	0.9	7439-89-6

IT 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4))
484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-14-4P, Iron lithium fluoride phosphate (Fe2Li4F(PO4)3) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3)
484040-27-9P 484040-28-0P
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

RN 484039-91-0 HCAPLUS

CN Lithium nickel fluoride phosphate (Li2NiF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Ni	1	7440-02-0
Li	2	7439-93-2

RN 484039-95-4 HCAPLUS
CN Lithium manganese fluoride phosphate (Li2MnF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2

RN 484039-97-6 HCAPLUS
CN Copper lithium fluoride phosphate (CuLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Cu	1	7440-50-8
Li	2	7439-93-2

RN 484040-14-4 HCAPLUS
CN Iron lithium fluoride phosphate (Fe2Li4F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
Li	4	7439-93-2
Fe	2	7439-89-6

RN 484040-15-5 HCAPLUS
CN Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	4	7439-93-2

RN 484040-20-2 HCAPLUS
CN Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number

F	2	14762-94-8
O4P	3	14265-44-2
Mn	2	7439-96-5
Li	5	7439-93-2

RN 484040-22-4 HCAPLUS
CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

RN 484040-27-9 HCAPLUS
CN Aluminum antimony lithium vanadium fluoride oxide phosphate (AlSb0.5Li4VFO2(PO4)0.25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
F	1	14762-94-8
O4P	0.25	14265-44-2
V	1	7440-62-2
Sb	0.5	7440-36-0
Li	4	7439-93-2
Al	1	7429-90-5

RN 484040-28-0 HCAPLUS
CN Aluminum cobalt lithium magnesium fluoride phosphate (Al0.02Co0.9Li2.02Mg0.05F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	0.9	7440-48-4
Mg	0.05	7439-95-4
Li	2.02	7439-93-2
Al	0.02	7429-90-5

IC ICM H01M004-58
ICS C01B025-45; C01B025-30
INCL 429231900; X42-923.195; X42-922.1; X42-922.3; X42-922.0; X42-922.4; X42-923.15; X42-923.16; X42-330.6
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3, Iron lithium fluoride phosphate (FeLi2F(PO4)) 484039-88-5
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)
IT 52934-02-8P, Cobalt lithium fluoride phosphate 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, Iron lithium

fluoride phosphate 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-01-9P 484040-04-2P, Sodium vanadium fluoride phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO4)) 484040-12-2P 484040-13-3P, Sodium vanadium hydroxide phosphate (NaV(OH)(PO4)) 484040-14-4P, Iron lithium fluoride phosphate (Fe2Li4F(PO4)3) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-25-7P 484040-27-9P 484040-28-0P
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

REFERENCE COUNT: 127 THERE ARE 127 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 17 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2002:781946 HCAPLUS Full-text
DOCUMENT NUMBER: 138:290280
TITLE: X-Ray Absorption Study of LixMnyFe1-yPO4 (0 ≤x ≤1, 0 <y ≤1)
AUTHOR(S): Li, Guohua; Kudo, Yoshihiro; Liu, Kuang-Yu; Azuma, Hideto; Tohda, Masayuki
CORPORATE SOURCE: Sony Corporation, Nishi Battery Laboratories, Kanagawa, 243-0021, Japan
SOURCE: Journal of the Electrochemical Society (2002), 149(11), A1414-A1418
CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 14 Oct 2002
AB C-containing cathode materials LiMnyFe1-yPO4 (0 < y ≤ 1) were prepared by a solid-state reaction by adding C black to the synthetic precursors. The local structural change of electrochem. prepared LixMnyFe1-yPO4 (0 ≤ x ≤ 1, 0 < y ≤ 1) samples was studied by x-ray absorption spectroscopy. The local structural change of Mn is completely reversible during the charge-discharge processes. According to the anal. of K-edge x-ray absorption fine structure, no significant difference is observed in the local structure of Mn in the charged state for the whole range of Mn contents.
IT 213467-46-0, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(x-ray absorption spectroscopy of iron lithium manganese phosphate cathodes for lithium batteries)
RN 213467-46-0 HCAPLUS
CN Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy

Technology)
Section cross-reference(s): 73
IT 13826-59-0, Lithium manganese phosphate (LiMnPO4) 213467-46-0
, Iron lithium manganese phosphate (FeLi2Mn(PO4)2) 300858-61-1, Iron
lithium manganese phosphate (Fe0.4LiMn0.6(PO4)) 371145-95-8, Iron
lithium manganese phosphate (Fe0.25LiMn0.75(PO4)) 407629-83-8
412351-36-1, Iron lithium manganese phosphate (Fe0.9LiMn0.1(PO4))
464174-82-1, Iron lithium manganese phosphate ((Fe,Mn)Li0-1(PO4))
464174-83-2, Iron lithium manganese phosphate (Fe0.6LiMn0.4(PO4))
474903-00-9, Iron lithium manganese phosphate (Fe0.3LiMn0.7(PO4))
474903-03-2, Iron lithium manganese phosphate (Fe0.1LiMn0.9(PO4))
474903-04-3, Iron lithium manganese phosphate (Fe0.75LiMn0.25(PO4))
(x-ray absorption spectroscopy of iron lithium manganese phosphate
cathodes for lithium batteries)
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 18 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2002:734259 HCAPLUS Full-text
DOCUMENT NUMBER: 137:265592
TITLE: secondary lithium battery
INVENTOR(S): Fujita, Shigeru; Akashi, Hiroyuki; Adachi, Momoe;
Shibamoto, Goro
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002279989	A	20020927	JP 2001-77086 <--	20010316
PRIORITY APPLN. INFO.:			JP 2001-77086 <--	20010316

ED Entered STN: 27 Sep 2002
AB The battery has a Li intercalating and depositing anode and a oxide cathode active mass containing Li, P and ≥1 of Fe, Mn and Co. The cathode may also contain a 2nd oxide active mass containing Li and ≥1 of Co, Ni, and Mn. The anode active mass is selected from Li intercalating carbonaceous materials and metals, semiconductors, alloys, and compds. capable of alloying with Li.
IT 213467-46-0, Iron lithium manganese phosphate [FeLi2Mn(PO4)2]
(compns. of oxide cathodes for secondary lithium batteries with
lithium intercalating and depositing anodes)
RN 213467-46-0 HCAPLUS
CN Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

IC ICM H01M004-58
ICS H01M004-02; H01M004-38; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 15365-14-7, Iron lithium phosphate (FeLiPO4) 113066-89-0, Cobalt lithium nickel oxide (Co0.2LiNi0.8O2) 213467-46-0, Iron lithium manganese phosphate [FeLi2Mn(PO4)2]
(compns. of oxide cathodes for secondary lithium batteries with lithium intercalating and depositing anodes)

L25 ANSWER 19 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2002:688501 HCAPLUS Full-text
DOCUMENT NUMBER: 137:203995
TITLE: Method of preparation and battery use of lithium based phosphates
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: U.S., 25 pp., Cont.-in-part of U.S. 5,871,866.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6447951	B1	20020910	US 1998-195961 <--	19981119
CA 2351332	A1	20000602	CA 1999-2351332 <--	19991005
WO 2000031812	A1	20000602	WO 1999-US23074 <--	19991005
WO 2000031812	A9	20020822		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9965076	A	20000613	AU 1999-65076 <--	19991005
AU 764529	B2	20030821		
EP 1135819	A1	20010926	EP 1999-953046 <--	19991005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002530835	T	20020917	JP 2000-584544 <--	19991005
MX 2001PA04931	A	20040129	MX 2001-PA4931 <--	20010516
PRIORITY APPLN. INFO.:			US 1996-717919 A2 <--	19960923
			US 1998-195961 A <--	19981119
			WO 1999-US23074 W <--	19991005

ED Entered STN: 11 Sep 2002

AB A lithium ion battery comprises: a first electrode having an active material in a first condition of the nominal general formula Li3-xM'yM''2-y(PO4)3, x =

0, 0<y<2 and in a second condition of the nominal general formula: Li3-xM'yM''2-y(PO4)3, 0<x≤3, wherein M' is Zr or Ti and M'' is a metal selected from V, Cr, Mn, Fe, Co, Ni, Cu, Sn, Pb, Mo, W, Cd, Zn, and Pd, with the proviso that when M' is Ti, M'' is not Fe; a second electrode which is a counter-electrode to the first electrode; and an electrolyte between the electrodes.

IT 204653-32-7P, Aluminum lithium vanadium phosphate AlLi3V(PO4)3
(method of preparation and battery use of lithium based phosphates)

RN 204653-32-7 HCAPLUS

CN Aluminum lithium vanadium phosphate (AlLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

IC ICM H01M004-58

INCL 429218100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

IT 84159-18-2P, Lithium vanadium phosphate Li3V2(PO4)3
204653-32-7P, Aluminum lithium vanadium phosphate AlLi3V(PO4)3
270258-22-5P, Lithium manganese zirconium phosphate Li3MnZr(PO4)3
(method of preparation and battery use of lithium based phosphates)

L25 ANSWER 20 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:558477 HCAPLUS Full-text

DOCUMENT NUMBER: 138:92665

TITLE: A neutron powder diffraction study of electrochemically lithiated R-Li3+xFe2(PO4)3 for x = 1.8

AUTHOR(S): Eyob, Paulos; Andersson, Anna S.; Thomas, John O.

CORPORATE SOURCE: Department of Materials Chemistry, Angstrom Laboratory, Uppsala University, Uppsala, SE-751 21, Swed.

SOURCE: Journal of Materials Chemistry (2002), 12(8), 2343-2347
CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 29 Jul 2002

AB The electrochem. lithiated form of R-Li3Fe2(PO4)3, synthesized by ion exchange of fine powders of Na3Fe2(PO4)3 in a concentrated aqueous solution of LiNO3 at a slightly elevated temperature (40 °C), has been investigated by a combination of ex situ X-ray and neutron diffraction to probe particularly the lithium-ion distribution in the structure. Li3+xFe2(PO4)3 samples were extracted from discharged electrochem. cells with a Li-metal anode; their structure was refined by the Rietveld method. Approx. 1.8 Li per formula unit can be inserted reversibly into the structure, corresponding to the reduction of almost all Fe3+ to Fe2+. Ex situ X-ray powder diffraction shows the Fe2(PO4)3 framework to remain intact during lithiation. The Li(18f) site in R-Li3Fe2(PO4)3 (space group: R3[cmb.macr]) is totally vacated in R-Li3+xFe2(PO4)3, 0 ≤ x ≤ 1.8, with the lithium ions moving into two new general (18f) positions, Li(1) and Li(2), with 74(4)% and 86(4)% occupation, resp. This corresponds to the Li+ ions moving cooperatively from pairs of layers

(alternate sepns.: 2.2 and 5.4 Å) for x = 0 to equally spaced layers (separation: 3.8 Å) for x = 1.8.

IT 483644-73-1, Iron lithium phosphate (Fe2Li4.8(PO4)3)
(neutron powder diffraction study of electrochem. lithiated R-Li3+xFe2(PO4)3 for x = 1.8)

RN 483644-73-1 HCAPLUS

CN Iron lithium phosphate (Fe2Li4.8(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	4.8	7439-93-2
Fe	2	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 483644-73-1, Iron lithium phosphate (Fe2Li4.8(PO4)3)
(neutron powder diffraction study of electrochem. lithiated R-Li3+xFe2(PO4)3 for x = 1.8)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 21 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:505613 HCAPLUS Full-text

DOCUMENT NUMBER: 137:355365

TITLE: Optimized LiMnyFe1-yPO4 as the cathode for lithium batteries

AUTHOR(S): Li, Guohua; Azuma, Hideto; Tohda, Masayuki

CORPORATE SOURCE: Nishi Battery Laboratories, Sony Corporation, Atsugi, 243-0021, Japan

SOURCE: Journal of the Electrochemical Society (2002), 149(6), A743-A747
CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 07 Jul 2002

AB A new synthesis route has been developed for LiMnyFe1-yPO4 (y = 0-0.9) powders. A significant improvement in electrode performance has been achieved by adding carbon black to the synthetic precursor. The carbon-containing LiMnyFe1-yPO4 was synthesized under various conditions and the performance of the cathodes was evaluated using coin cells. The samples were characterized by X-ray diffraction, particle-size distribution measurements, scanning electron microscope observations, and BET surface area measurements. The addition of carbon black limited the particle size growth and enabled high electronic conductivity Another advantage is simplification of electrode preparation, only needs the cathode powder to be mixed with binder. At large Mn content (y = 0.75), a high capacity of 164 mAh/g has been achieved with an average discharge voltage of 3.63 V (595 Wh/kg) at room temperature In addition, LiMnyFe1-yPO4 demonstrated excellent storage performance at elevated temps. The thermal stability of the charged cathode was evaluated by thermogravimetric and differential scanning calorimetric thermal analyses.

IT 213467-46-0, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(cathode; optimized high-manganese-content carbon black-containing lithium manganese iron phosphates as cathodes for rechargeable lithium batteries)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 15365-14-7, Iron lithium phosphate (FeLiPO4) 213467-46-0, Iron lithium manganese phosphate (FeLi2Mn(PO4)2) 300858-61-1 371145-95-8 407629-83-8 407640-52-2, Iron lithium manganese phosphate (Fe0.1-1LiMn0-0.9(PO4)) 412351-36-1, Iron lithium manganese phosphate (Fe0.9LiMn0.1(PO4)) 464174-83-2 464174-90-1 474902-99-3, Iron lithium manganese phosphate (Fe0.35LiMn0.65(PO4)) 474903-00-9, Iron lithium manganese phosphate (Fe0.3LiMn0.7(PO4)) 474903-03-2, Iron lithium manganese phosphate (Fe0.1LiMn0.9(PO4)) 474903-04-3
(cathode; optimized high-manganese-content carbon black-containing lithium manganese iron phosphates as cathodes for rechargeable lithium batteries)
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 22 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2002:316793 HCAPLUS Full-text
DOCUMENT NUMBER: 137:235112
TITLE: A reversible lithium intercalation process in an ReO3-type structure PNb9O25
AUTHOR(S): Patoux, Sebastien; Dolle, Mickael; Rousse, Gwenaelle; Masquelier, Christian
CORPORATE SOURCE: Laboratoire de Reactivite et de Chimie des Solides, CNRS UMR 6007, Universite de Picardie Jules Verne, Amiens, 80039, Fr.
SOURCE: Journal of the Electrochemical Society (2002), 149(4), A391-A400
CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 28 Apr 2002
AB Among the large family of Wadsley-Roth-type phases, PNb9O25 presents, as other shear structures such as H-Nb2O5, GeNb18O47, and VNb9O25, a peculiar arrangement of 3 + 3 + ∞ ReO3-type blocks connected through XO4 tetrahedra. The crystal structure was redetd. by combined Rietveld refinements of X-ray and neutron powder diffraction data, for the first time in the tetragonal space group I4 with a = 15.615(1) Å and c = 3.829(1) Å. The electrochem. insertion of lithium into LixPNb9O25 reaches a value of x = 13.5, between 3.0 and 1.0 V vs. Li+/Li at a slow cycling rate. Within this voltage window, in situ X-ray diffraction reveals that the reversible intercalation of lithium occurs through three single- and two two-phase regions. The variation of the lattice parameters as a function of x indicates a global change of ΔV/V = +10% associated with the reduction of Nb5+ to Nb4+ and then partly to Nb3+. At voltages lower than 1 V vs. Li+/Li, extra irreversible phenomena, such as electrolyte and/or carbon reduction were identified but, remarkably, highly crystalline particles of LixPNb9O25 remain unaltered when discharging the cell for prolonged time down to 0.02 V vs. Li+/Li. The behavior of LixPNb9O25 is

very similar to that of H-LixNb2O5 (LixNbNb9O25) but different to that of LixVNb9O25 where irreversible reduction of V5+ to V2+ (in tetrahedral coordination) takes place.

IT 459412-78-3, Lithium niobium oxide phosphate (Li6.3Nb9O21(PO4))
(formation and properties of; reversible lithium intercalation process in an ReO3-type structure PNb9O25 in secondary batteries)

RN 459412-78-3 HCAPLUS

CN Lithium niobium oxide phosphate (Li6.3Nb9O21(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	21	17778-80-2
O4P	1	14265-44-2
Nb	9	7440-03-1
Li	6.3	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75

IT 459412-77-2, Lithium niobium oxide phosphate (Li8.8Nb5O21(PO4))
459412-78-3, Lithium niobium oxide phosphate (Li6.3Nb9O21(PO4))
(formation and properties of; reversible lithium intercalation process in an ReO3-type structure PNb9O25 in secondary batteries)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 23 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:256645 HCAPLUS Full-text

DOCUMENT NUMBER: 136:297382

TITLE: Carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes

INVENTOR(S): Armand, Michel; Gauthier, Michel; Magnan, Jean-Francois; Ravet, Nathalie

PATENT ASSIGNEE(S): Hydro-Quebec, Can.

SOURCE: PCT Int. Appl., 78 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002027824	A1	20020404	WO 2001-CA1350 <--	20010921

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2320661	A1	20020326	CA 2000-2320661 <--	20000926
CA 2423129	A1	20020404	CA 2001-2423129 <--	20010921
AU 2001093569	A	20020408	AU 2001-93569 <--	20010921
EP 1325526	A1	20030709	EP 2001-973907 <--	20010921
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004509058	T	20040325	JP 2002-531518 <--	20010921
US 20040086445	A1	20040506	US 2003-362764 <--	20030619
US 7285260	B2	20071023		
US 20070134554	A1	20070614	US 2007-655084 <--	20070119

PRIORITY APPLN. INFO.:	CA 2000-2320661 <--	A	20000926
	WO 2001-CA1350 <--	W	20010921
	US 2003-362764 <--	A1	20030619

ED Entered STN: 05 Apr 2002

AB Carbon-coated redox materials suitable for use in battery electrodes consist of a core surrounded by a coating, or interconnected by carbon crosslinks, in which the core includes a composition of formula LixM1-yM'y(XO4)n, in which y = 0-0.6, x = 0-2, n = 0-1.5; M is a transition metal; and M' is a element of fixed valence selected from Mg2+, Ca2+, Al3+, and Zn2+, and X is S, P, and Si. Synthesis of the materials is carried out by reacting a balanced mixture of appropriate precursors in a reducing atmospheric, to adjust the valence of the transition metals, in the presence of a carbon source, which is then pyrolyzed. The resulting products exhibit an excellent elec. conductivity and a highly enhanced chemical activity.

IT 213467-46-0, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(electrodes containing; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

IT 407640-60-2, Iron lithium manganese phosphate sulfate (Fe1-2Li1-2Mn0-1[(PO4),(SO4)]) 407640-61-3, Iron lithium titanium phosphate ((Fe,Ti)Li0.5-2(PO4)1.5)
(metal source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

RN 407640-60-2 HCAPLUS

CN Iron lithium manganese phosphate sulfate (Fe1-2Li1-2Mn0-1[(PO4),(SO4)]) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O4S	0 - 1	14808-79-8
O4P	0 - 1	14265-44-2
Mn	0 - 1	7439-96-5
Li	1 - 2	7439-93-2
Fe	1 - 2	7439-89-6

RN 407640-61-3 HCAPLUS
CN Iron lithium titanium phosphate ((Fe,Ti)Li0.5-2(PO4)1.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1.5	14265-44-2
Ti	0 - 1	7440-32-6
Li	0.5 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IC ICM H01M004-48
ICS C01B025-37; C01B033-20; H01M004-58; H01M004-62; C01B017-96
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 7439-89-6D, Iron, mixed oxides 7439-96-5D, Manganese, mixed oxides 7440-02-0D, Nickel, mixed oxides 7440-32-6D, Titanium, mixed oxides 7440-47-3D, Chromium, mixed oxides 7440-48-4D, Cobalt, mixed oxides 7440-50-8D, Copper, mixed oxides 7440-62-2D, Vanadium, mixed oxides 13816-45-0, Triphylite 15365-14-7, Iron lithium phosphate (FeLiPO4) 213467-46-0, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(electrodes containing; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1309-37-1, Ferric oxide, reactions 1310-65-2, Lithium hydroxide 1313-13-9, Manganese dioxide, reactions 1314-62-1, Vanadium pentoxide, reactions 1317-61-9, Magnetite, reactions 10045-86-0, Ferric phosphate 10102-24-6, Lithium silicate (Li2SiO3) 10377-48-7, Lithium sulfate 10377-52-3, Lithium phosphate (Li3PO4) 10421-48-4, Ferric nitrate 12057-24-8, Lithium oxide, reactions 12627-14-4 13453-80-0, Lithium dihydrogen phosphate 63985-45-5, Lithium orthosilicate 407640-52-2, Iron lithium manganese phosphate (Fe0.1-1LiMn0-0.9(PO4)) 407640-53-3, Iron lithium magnesium phosphate (Fe0.7-1LiMg0-0.3(PO4)) 407640-54-4, Calcium iron lithium phosphate (Ca0-0.3Fe0.7-1Li(PO4)) 407640-55-5 407640-56-6, Iron lithium phosphate silicate (FeLi1-1.9(PO4)0.1-1(SiO4)0-0.9) 407640-57-7 407640-58-8, Iron lithium manganese phosphate sulfate (Fe0-1Li1-1.2Mn0-0.2[(PO4),(SO4)]) 407640-59-9, Iron lithium manganese phosphate ((Fe,Mn)Li1-1.6(PO4)) 407640-60-2, Iron lithium manganese phosphate sulfate (Fe1-2Li1-2Mn0-1[(PO4),(SO4)]) 407640-61-3, Iron lithium titanium phosphate ((Fe,Ti)Li0.5-2(PO4)1.5)
(metal source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 24 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:256644 HCAPLUS Full-text
DOCUMENT NUMBER: 136:297381
TITLE: Method for synthesis of carbon-coated redox materials with controlled size
INVENTOR(S): Armand, Michel; Gauhtier, Michel; Magnan, Jean-Francois; Ravet, Nathalie
PATENT ASSIGNEE(S): Hydro-Quebec, Can.
SOURCE: PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002027823	A1	20020404	WO 2001-CA1349 <--	20010921
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2320661	A1	20020326	CA 2000-2320661 <--	20000926
CA 2422446	A1	20020404	CA 2001-2422446 <--	20010921
AU 2001093568	A	20020408	AU 2001-93568 <--	20010921
EP 1325525	A1	20030709	EP 2001-973906 <--	20010921
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004509447	T	20040325	JP 2002-531517 <--	20010921
US 20040033360	A1	20040219	US 2003-362763 <--	20030619

PRIORITY APPLN. INFO.:
CA 2000-2320661 A 20000926 <--
WO 2001-CA1349 W 20010921 <--

ED Entered STN: 05 Apr 2002

AB Carbon-coated redox materials suitable for use as battery electrodes and for fabrication of electrochromic materials, consist of compns. of formulas C-LixM1-y (XO4)n or LixM1-yM'y (XO4)n, in which: y = 0-0.6; x = 0-2; n = 1-1.5; M is a transition metal or a mixture of first-row transition metals; M' is a fixed-valent metal ion selected from Mg2+, Ca2+, Al3+, or Zn2+; and X is S, P, and Si. The resulting materials consist of particles coated with a conductive carbon layer. The compns. are prepared by reacting a balanced mixture of precursors in the appropriate proportions, including a pyrolysis step for the carbon-producing compound(s), such that the materials form a powdered composition with the desired formula, that has an elec. conductivity of >10-8 S/cm when compacted at 3750 kg/cm2.

IT 213467-46-0P, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(redox cathode containing; synthesis of carbon-coated redox materials

for use as battery cathodes and in electrochromic devices)
RN 213467-46-0 HCAPLUS
CN Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

IC ICM H01M004-48
ICS H01M004-58; H01M004-62; C01B025-37; C01B033-20
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
IT 7429-90-5P, Aluminum, uses 7439-95-4P, Magnesium, uses 7440-66-6P, Zinc, uses 7440-70-2P, Calcium, uses 13816-45-0P, Triphylite 15365-14-7P, Iron lithium phosphate (FeLiPO4) 213467-46-0P, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(redox cathode containing; synthesis of carbon-coated redox materials for use as battery cathodes and in electrochromic devices)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 25 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:830853 HCAPLUS Full-text
DOCUMENT NUMBER: 135:349452
TITLE: Electric cells and gas sensors using alkali ion conductive glass ceramic
INVENTOR(S): Fu, Jie
PATENT ASSIGNEE(S): Kabushiki Kaisha Ohara, Japan
SOURCE: U.S., 13 pp., Cont.-in-part of U.S. Ser. No. 923,233, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6315881	B1	20011113	US 1999-289242 <--	19990409
JP 09142874	A	19970603	JP 1995-320971 <--	19951115
JP 3126306	B2	20010122		
JP 10097811	A	19980414	JP 1997-38303 <--	19970206
JP 3012211	B2	20000221		
EP 857699	A2	19980812	EP 1997-110106 <--	19970620
EP 857699	A3	19980916		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
EP 1028094	A2	20000816	EP 2000-110476 <--	19970620
EP 1028094	A3	20000920		

EP 1028094	B1	20030521		
R: DE, FR, GB				
JP 2000026135	A	20000125	JP 1999-149686 <--	19990528
JP 4090148	B2	20080528		
PRIORITY APPLN. INFO.:			JP 1995-320971 <--	A 19951115
			JP 1996-115694 <--	A 19960412
			JP 1997-38303 <--	A 19970206
			US 1997-923233 <--	B2 19970904
			JP 1996-48379 <--	A 19960209
			EP 1997-110106 <--	A3 19970620

ED Entered STN: 15 Nov 2001

AB A solid elec. cell includes a case, a neg. electrode, a pos. electrode and a solid electrolyte. The neg. electrode, pos. electrode and solid electrolyte are disposed in the case in such a manner that the neg. electrode opposes the pos. electrode through the solid electrolyte. The solid electrolyte is made of an alkali ion conductive glass-ceramic having ion conductivity no less than 10-3 S/cm at room temperature A gas sensor includes a case, a neg. electrode, a pos. electrode, a solid electrolyte and a layer for which an electromotive force corresponding to the concentration of the gas is produced between the two electrodes. In the case, the neg. electrode opposes the pos. electrode through the solid electrolyte. The solid electrolyte is made of an alkali ion conductive glass-ceramic having ion conductivity no less than 10-3 S/cm at room temperature

IT 371788-57-7P
(elec. cells and gas sensors using alkali ion conductive glass ceramic)

RN 371788-57-7 HCAPLUS

CN Aluminum gallium lithium titanium phosphate silicate ([Al,Ga,Li,Ti,(PO4),(SiO4)]0.4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0 - 0.6	17181-37-2
O4P	2.4 - 3	14265-44-2
Ga	0 - 0.4	7440-55-3
Ti	1.6 - 2	7440-32-6
Li	1 - 2	7439-93-2
Al	0 - 0.4	7429-90-5

IC ICM G01N027-406
ICS C03C010-10; C03C004-18

INCL 204424000

CC 72-3 (Electrochemistry)
Section cross-reference(s): 57

IT 201010-48-2P 371788-57-7P
(elec. cells and gas sensors using alkali ion conductive glass ceramic)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 26 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:796402 HCAPLUS Full-text
DOCUMENT NUMBER: 135:346863
TITLE: Cathode active material for nonaqueous electrolyte battery
INVENTOR(S): Li, Guohua; Yamada, Atsuo
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 47 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150367	A2	20011031	EP 2001-109945 <--	20010424
EP 1150367	A3	20070411		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, CY, TR, AL, MK				
JP 2001307731	A	20011102	JP 2000-128999 <--	20000425
JP 2001307732	A	20011102	JP 2000-129000 <--	20000425
CA 2344903	A1	20011025	CA 2001-2344903 <--	20010423
TW 525313	B	20030321	TW 2001-90109594 <--	20010423
MX 2001PA04028	A	20030820	MX 2001-PA4028 <--	20010423
CN 1322023	A	20011114	CN 2001-121243 <--	20010425
US 20010055718	A1	20011227	US 2001-842483 <--	20010425
US 6749967	B2	20040615		
KR 809854	B1	20080304	KR 2001-22364 <--	20010425

PRIORITY APPLN. INFO.:	JP 2000-128999 <--	A	20000425
	JP 2000-129000 <--	A	20000425

ED Entered STN: 02 Nov 2001
AB A pos. electrode active material and a nonaq. electrolyte cell which uses the pos. electrode active material are disclosed. The cell has a high discharge voltage without lowering the capacity and superior charging/discharging characteristics. To this end, the pos. electrode active material contains a compound represented by the general formula LixMnyFe1-yPO4, wherein 0 < + ≤ 2 and 0.5 < y < 0.95, or a compound represented by the general formula LixMnyA1-yPO4, where 0 < x ≤ 2 and 0 < y < 1 and wherein A is a metal element selected from among Ti, Zn, Mg and Co or plural metal elements selected from among Ti, Fe, Zn, Mg and Co.
IT 371145-93-6, Iron lithium manganese phosphate (Fe0.05-0.5Li0-2Mn0.5-0.95(PO4))
(cathode active material for nonaq. electrolyte battery)
RN 371145-93-6 HCAPLUS
CN Iron lithium manganese phosphate (Fe0.05-0.5Li0-2Mn0.5-0.95(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P	1	14265-44-2
Mn	0.5 - 0.95	7439-96-5
Li	0 - 2	7439-93-2
Fe	0.05 - 0.5	7439-89-6

IC ICM H01M004-50
ICS H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 108-32-7, Propylene carbonate 616-38-6, Dimethylcarbonate 7429-90-5, Aluminum, uses 21324-40-3, Lithium hexafluorophosphate 371145-93-6, Iron lithium manganese phosphate (Fe0.05-0.5Li0-2Mn0.5-0.95(PO4))
(cathode active material for nonaq. electrolyte battery)

L25 ANSWER 27 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:688464 HCAPLUS Full-text
DOCUMENT NUMBER: 135:347775
TITLE: Li3Sc2-xFex(PO4)3 thin films and powders prepared by ultrasonic spray pyrolysis
AUTHOR(S): Ivanov-Schitz, A. K.; Nistuk, A. V.; Demianets, L. N.; Chaban, N. G.
CORPORATE SOURCE: Institute of Crystallography, Russian Academy of Science, Moscow, Russia
SOURCE: Solid State Ionics (2001), 144(1,2), 133-141
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 20 Sep 2001
AB Thin films of Li3Sc2-xFex(PO4)3 (x=0.5, 2) solid electrolytes have been prepared on quartz glass substrates by ultrasonic spray pyrolysis (USP) using aqueous solns. of LiH2PO4, Sc(NO3)3 and Fe(NO3)3 at substrate temperature of 500-700°C. The amorphous as-deposited films were converted into crystalline materials by heat treatment at 800-1000°C. The optimal deposition parameters for formation of uniform precursor films with good adhesion to the substrate were determined The dense films composed of fine columnar grains were obtained using the 3 cycles of deposition and annealing. The room temperature ionic conductivity of the film with the composition x=0.5 was 5+10-6 S/cm. The superionic γ-phase of USP ceramics of composition Li3Sc2-xFex(PO4)3 ($0<x\leq0.6$) was stabilized at room temperature, which may be caused by slight structural distortions and changes in the interactions between the lithium ions during Sc3+→Fe3+ substitution. The highest ionic conductivity σ(25°C) ≈ 1+10-5 S/cm was observed for ceramics with x=0.4.
IT 141051-47-0P, Iron lithium scandium phosphate Fe0.2Li3Sc1.8(PO4)3 155694-16-9P, Iron lithium scandium phosphate Fe0.4Li3Sc1.6(PO4)3 155694-17-0P, Iron lithium scandium phosphate Fe0.6Li3Sc1.4(PO4)3 371758-79-1P, Iron lithium scandium phosphate (Fe0.1Li3Sc1.9(PO4)3) 371758-80-4P, Iron lithium scandium phosphate (Fe0.3Li3Sc1.7(PO4)3)
(powders and films; ultrasonic spray pyrolysis preparation and properties of Li3Sc2-xFex(PO4)3 thin films and powders)
RN 141051-47-0 HCAPLUS
CN Iron lithium scandium phosphate (Fe0.2Li3Sc1.8(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P	3	14265-44-2
Sc	1.8	7440-20-2
Li	3	7439-93-2
Fe	0.2	7439-89-6

RN 155694-16-9 HCAPLUS
CN Iron lithium scandium phosphate (Fe0.4Li3Sc1.6(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.6	7440-20-2
Li	3	7439-93-2
Fe	0.4	7439-89-6

RN 155694-17-0 HCAPLUS
CN Iron lithium scandium phosphate (Fe0.6Li3Sc1.4(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.4	7440-20-2
Li	3	7439-93-2
Fe	0.6	7439-89-6

RN 371758-79-1 HCAPLUS
CN Iron lithium scandium phosphate (Fe0.1Li3Sc1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.9	7440-20-2
Li	3	7439-93-2
Fe	0.1	7439-89-6

RN 371758-80-4 HCAPLUS
CN Iron lithium scandium phosphate (Fe0.3Li3Sc1.7(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.7	7440-20-2
Li	3	7439-93-2
Fe	0.3	7439-89-6

CC 57-2 (Ceramics)
Section cross-reference(s): 52, 76
IT 36058-25-0P, Iron lithium phosphate Fe2Li3(PO4)3 87796-15-4P, Lithium scandium phosphate Li3Sc2(PO4)3 141051-47-0P, Iron lithium scandium phosphate Fe0.2Li3Sc1.8(PO4)3 155694-16-9P, Iron lithium scandium phosphate Fe0.4Li3Sc1.6(PO4)3 155694-17-0P, Iron lithium scandium phosphate Fe0.6Li3Sc1.4(PO4)3 371758-79-1P, Iron lithium scandium phosphate (Fe0.1Li3Sc1.9(PO4)3) 371758-80-4P, Iron lithium scandium phosphate (Fe0.3Li3Sc1.7(PO4)3) 371758-81-5P
(powders and films; ultrasonic spray pyrolysis preparation and

properties of Li3Sc2-xFex(PO4)3 thin films and powders)
REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 28 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:414793 HCAPLUS Full-text
DOCUMENT NUMBER: 135:35187
TITLE: Batteries comprising solid electrolytes sandwiched in between spinel-type lithium manganate cathodes and spinel-type lithium titanate anodes
INVENTOR(S): Hara, Toru; Kitahara, Nobuyuki; Uemura, Toshihiko; Mishima, Hiromitsu; Magome, Shinji; Osaki, Makoto; Higuchi, Hisashi
PATENT ASSIGNEE(S): Kyocera Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001155763	A	20010608	JP 1999-336715 <--	19991126
PRIORITY APPLN. INFO.:			JP 1999-336715 <--	19991126

ED Entered STN: 08 Jun 2001
AB The batteries comprise solid electrolytes of (A) sintered materials of Li2MnO3 and Li1+x+yMxTi2-xSiyP3-yO12 (I; M = Al or Ga; x = 0-0.4; 0 < y ≤ 0.6) on the cathode side and (B) sintered materials of Li2TiO3 and I on the anode side, sandwiched in between the electrodes and placed in an outer package. Such batteries with cathodes consisting of Li1+xMn2-xO4 (x = 0.05-0.2) or Li1+xNiyMn2-x-yO4 (x = 0-0.2; 0.4 ≤ y < 0.6) and anodes consisting of Li1+xTi2-xO4 (x = 0.25-0.40) are also claimed. Batteries with low surface resistance between the electrodes and the electrolytes are obtained. The batteries are suitable for use in personal digital assistance.
IT 343950-39-0 343950-42-5
(electrolyte; batteries comprising lithium titanium phosphate silicate electrolytes showing low surface resistances with lithium spinel oxide electrodes for use in personal digital assistances)
RN 343950-39-0 HCAPLUS
CN Aluminum lithium titanium phosphate silicate (Al0-0.4Li1-2Ti1.4-2(PO4)2.4-3(SiO4)0-0.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0 - 0.6	17181-37-2
O4P	2.4 - 3	14265-44-2
Ti	1.4 - 2	7440-32-6
Li	1 - 2	7439-93-2
Al	0 - 0.4	7429-90-5

RN 343950-42-5 HCAPLUS
CN Gallium lithium titanium phosphate silicate (Ga0-0.4Li1-2Ti1.4-2(PO4)2.4-3(SiO4)0-0.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O4Si	0 - 0.6	17181-37-2
O4P	2.4 - 3	14265-44-2
Ga	0 - 0.4	7440-55-3
Ti	1.4 - 2	7440-32-6
Li	1 - 2	7439-93-2

IC ICM H01M010-36
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
IT 343950-37-8 343950-39-0 343950-42-5
(electrolyte; batteries comprising lithium titanium phosphate silicate electrolytes showing low surface resistances with lithium spinel oxide electrodes for use in personal digital assistances)

L25 ANSWER 29 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:351119 HCAPLUS Full-text
DOCUMENT NUMBER: 135:124791
TITLE: Study on lithium fast ion conductors Li1+2x+yAlxEuyTi2-x-ySixP3-xO12 system
AUTHOR(S): Fan, Rui-quan; Wang, Wen-ji; Lin, Shen
CORPORATE SOURCE: Department of Chemistry, Fuzhou University, Fuzhou, Fujian, 350002, Peop. Rep. China
SOURCE: Fuzhou Daxue Xuebao, Ziran Kexueban (2001), 29(1), 83-85
CODEN: FDXKEN; ISSN: 1000-2243
PUBLISHER: Fuzhou Daxue Xuebao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
ED Entered STN: 17 May 2001
AB Natural layered aluminosilicate kaolinite Al4[Si4O10](OH)8 is used as a starting material for preparing a new system of lithium fast ion conductors Li1+2x+yAlxEuyTi2-x-ySixP3-xO12 by high temperature (800-1000°C) solid phase reaction for about 20 h. A solid solution phase with R.hivin.3C structure exists in a limited composition region. The elec. measurements indicate that the maximum conductivity in the above system (referred to as Al-Eu-Lisicon) is the initial composition with χ = 0.2 and y = 0.1 under which its conductivity reaches up to 9.98 m/cm at 400°C and the activation energy is 34.0 kJ/mol.
IT 350681-79-7
(lithium fast ion conductors Li1+2x+yAlxEuyTi2-x-ySixP3-xO12 system)
RN 350681-79-7 HCAPLUS
CN Aluminum europium lithium titanium phosphate silicate (Al0.1-0.8Eu0.1-0.7Li1.3-3.3Ti0.5-1.8(PO4)2.2-2.9(SiO4)0.1-0.8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1 - 0.8	17181-37-2
O4P	2.2 - 2.9	14265-44-2
Eu	0.1 - 0.7	7440-53-1
Ti	0.5 - 1.8	7440-32-6
Li	1.3 - 3.3	7439-93-2
Al	0.1 - 0.8	7429-90-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy

Technology)
Section cross-reference(s): 72, 76
IT 350681-79-7 350681-81-1
(lithium fast ion conductors Li1+2x+yAlxEuyTi2-x-ySixP3-xO12 system)

L25 ANSWER 30 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:192597 HCAPLUS Full-text
DOCUMENT NUMBER: 134:210598
TITLE: Preparation of lithium-containing phosphates for battery use
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: U.S., 13 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6203946	B1	20010320	US 1998-204944 <--	19981203
US 20010021472	A1	20010913	US 2001-776843 <--	20010205
US 6720110	B2	20040413		
US 20040086784	A1	20040506	US 2003-681563 <--	20031006

PRIORITY APPLN. INFO.:
US 1996-717979 A1 19960923 <--
WO 1997-US15544 A1 19970904 <--
US 1998-204944 A1 19981203 <--
US 2001-776843 A1 20010205 <--

ED Entered STN: 21 Mar 2001
AB The invention provides an electrochem. cell which comprises a first electrode and a second electrode which is a counter electrode to the first electrode. The first electrode comprises a phosphorous compound of the nominal general formula Li3E'aE"b(PO4)3, desirably at least one E is a metal; and preferably, Li3M'M"(PO4)3. E' and E" are the same or different from one another. Where E' and E" are the same, they are preferably metals having more than one oxidation state. Where E' and E" are different from one another, they are preferably selected from the group of metals where at least one of E' and E" has more than one oxidation state.
IT 329025-35-6P, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(preparation of lithium-containing phosphates for battery use)
RN 329025-35-6 HCAPLUS
CN Iron lithium phosphate (Fe2Li1-3(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

IC ICM H01M004-58

ICS H01M004-48
INCL 429231100
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 36058-25-0P, Iron lithium phosphate Fe2Li3(PO4)3 69104-85-4P, Chromium lithium phosphate Cr2Li3(PO4)3 84159-18-2P, Lithium vanadium phosphate Li3V2(PO4)3 285564-74-1P 329025-35-6P, Iron lithium phosphate (Fe2Li1-3(PO4)3) 329025-36-7P 329025-38-9P 329025-39-0P
(preparation of lithium-containing phosphates for battery use)
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 31 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:179635 HCAPLUS Full-text
DOCUMENT NUMBER: 134:210518
TITLE: Process for large scale fabrication of lithium polymer batteries with solid electrolytes in the film technology
INVENTOR(S): Meislitzer, Karl Heinz
PATENT ASSIGNEE(S): Bangert, Wolfgang, Germany; Sebastian, Rudolf
SOURCE: Ger. Offen., 12 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19941861	A1	20010315	DE 1999-19941861 <--	19990902
PRIORITY APPLN. INFO.:			DE 1999-19941861 <--	19990902

ED Entered STN: 15 Mar 2001
AB Films for cathodes and anodes as well as for the electrolytes are pulled from pastes of suitable composition and preparation Cathode pastes are prepared from: 3-10% polymer or copolymer, PEO, polystyrene, polyvinyl chloride. polyvinylidene fluoride, or polyvinylidene fluoride-hexafluropropylene copolymer (PVDF-HFP); 4-12% plasticizer (e.g., dibutylphthalate or dioctyl phthalate); 20-60 g% intercalation material (e.g., LiCoO2, LiNiO2, LiCoxNi1-xO2, LiMn2O4 or VOx); 2-10% elec. conductor (e.g., graphite powder or amorphous C); and 40-80% solvent (e.g., acetone). Anode paste comprises: 3-10% polymer or copolymer (e.g., PEO, polystyrene, PVC, PVDF, or PVDF-HFP copolymer), 4-12% plasticizer (di-Bu phthalate or dioctyl phthalate), 20-40% elec. conductor (graphite powder or amorphous C), and 40-80% solvent (acetone). The electrolyte paste comprises: 3-10 g% polymer or copolymer (PEO, polystyrene, PVC, PVDF or hexafluoropropylene- vinylidene fluoride copolymer), 4-12% plasticizer (DBP or DOP), 20-40% ionic conductor (Li9AlSiO8, Li1.3Al0.3Ti1.7(PO4)3, LiTi2(PO4)3, Li2O or Li4SiO4.Li3PO4), 2-10% ionic conductor (LiClO4, LiBF4, LiCl, LiBr, or LiI) and 40-80 g% solvent (acetone).
IT 328899-26-9, Lithium titanium oxide phosphate (Li3Ti2O(PO4)3)
(process for large scale fabrication of lithium polymer batteries with solid electrolytes in film technol.)
RN 328899-26-9 HCAPLUS
CN Lithium titanium oxide phosphate (Li3Ti2O(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	1	17778-80-2
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	3	7439-93-2

IC ICM H01M004-04
ICS H01M004-62; H01M004-48
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide 14283-07-9, Lithium tetrafluoroborate 30622-39-0, Lithium titanium phosphate LiTi2(PO4)3 120479-61-0, Aluminum lithium titanium phosphate Al0.3Li1.3Ti1.7(PO4)3 138728-82-2, Lithium phosphate silicate (Li3.5(PO4)0.5(SiO4)0.5) 180728-17-0, Aluminum lithium oxide silicate (AlLi9O4(SiO4)) 328899-26-9, Lithium titanium oxide phosphate (Li3Ti2O(PO4)3)
(process for large scale fabrication of lithium polymer batteries with solid electrolytes in film technol.)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 32 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:83048 HCAPLUS Full-text
DOCUMENT NUMBER: 134:273893
TITLE: The synthesis and characterization of new lithium fast ion conductors Li1+2x+2yAlxZnyTi2-x-ySixP3-xO12 system
AUTHOR(S): Zhang, Yurong; Chen, Wenqing; Wang, Wenji
CORPORATE SOURCE: Department of Chemistry, Fuzhou University, Fuzhou, 350002, Peop. Rep. China
SOURCE: Solid State Ionics: Materials and Devices, [Proceedings of the Asian Conference], 7th, Fuzhou, China, Oct. 29-Nov. 4, 2000 (2000***), 69-73. Editor(s): Chowdari, B. V. R.; Wang, Wenji. World Scientific Publishing Co. Pte. Ltd.: Singapore, Singapore.
CODEN: 69AWLC
DOCUMENT TYPE: Conference
LANGUAGE: English
ED Entered STN: 05 Feb 2001
AB New lithium fast ion conductors Li1+2x+2yAlxZnyTi2-x-ySixP3-xO12 system based on LiTi2(PO4)3 were prepd. by high temp. (900-1150°C) solid phase reaction for about 20 h using refined natural kaolinite as a starting material. The syntheses temps. decreased with increasing x and y for the above system. XRD anal. indicates that a Lisicon phase with the R3c space group can be found in the compn. range of x=0.1, y≤0.7 and y=0.3, x≤0.3, while only when x=0.1, y≤0.2 can a single Lisicon phase exist. A.C. impedance measurements showed that the best sample was characterized by the t ionic cond. of 1.61+10-4 S/cm at room temp. and 4.83+10-2 S/cm at 673 K, its activation energy being 49.4 kJ/mol in the temp. range of 473-673 K.
IT ***332079-96-6P 332079-97-7P 332079-98-8P 332079-99-9P 332080-00-9P
(synthesis and characterization of lithium fast ion conductor Li1+2x+2yAlxZnyTi2-x-ySixP3-xO12 system)

RN 332079-96-6 HCAPLUS
CN Aluminum lithium titanium zinc phosphate silicate (Al0.1Li2Ti1.5Zn0.4(PO4)2.9(SiO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1	17181-37-2
O4P	2.9	14265-44-2
Zn	0.4	7440-66-6
Ti	1.5	7440-32-6
Li	2	7439-93-2
Al	0.1	7429-90-5

RN 332079-97-7 HCAPLUS
CN Aluminum lithium titanium zinc phosphate silicate (Al0.1Li2.2Ti1.4Zn0.5(PO4)2.9(SiO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1	17181-37-2
O4P	2.9	14265-44-2
Zn	0.5	7440-66-6
Ti	1.4	7440-32-6
Li	2.2	7439-93-2
Al	0.1	7429-90-5

RN 332079-98-8 HCAPLUS
CN Aluminum lithium titanium zinc phosphate silicate (Al0.1Li2.6Ti1.2Zn0.7(PO4)2.9(SiO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1	17181-37-2
O4P	2.9	14265-44-2
Zn	0.7	7440-66-6
Ti	1.2	7440-32-6
Li	2.6	7439-93-2
Al	0.1	7429-90-5

RN 332079-99-9 HCAPLUS
CN Aluminum lithium titanium zinc phosphate silicate (Al0.2Li2Ti1.5Zn0.3(PO4)2.8(SiO4)0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.2	17181-37-2
O4P	2.8	14265-44-2
Zn	0.3	7440-66-6
Ti	1.5	7440-32-6
Li	2	7439-93-2
Al	0.2	7429-90-5

RN 332080-00-9 HCAPLUS
CN Aluminum lithium titanium zinc phosphate silicate (Al0.3Li2.2Ti1.4Zn0.3(PO4)2.7(SiO4)0.3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.3	17181-37-2
O4P	2.7	14265-44-2
Zn	0.3	7440-66-6
Ti	1.4	7440-32-6
Li	2.2	7439-93-2
Al	0.3	7429-90-5

CC 76-1 (Electric Phenomena)
Section cross-reference(s): 52
IT 332079-94-4P 332079-95-5P 332079-96-6P
332079-97-7P 332079-98-8P 332079-99-9P
332080-00-9P
(synthesis and characterization of lithium fast ion conductor Li1+2x+2yAlxZnyTi2-x-ySixP3-xO12 system)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 33 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2001:19967 HCAPLUS Full-text
DOCUMENT NUMBER: 134:149942
TITLE: Enhancement of discharge capacity of Li3V2(PO4)3 by stabilizing the orthorhombic phase at room temperature
AUTHOR(S): Sato, Mineo; Ohkawa, Hirokazu; Yoshida, Kenji; Saito, Mai; Uematsu, Kazuyoshi; Toda, Kenji
CORPORATE SOURCE: Department of Chemistry and Chemical Engineering, Faculty of Engineering, Niigata University, Niigata, 950-2181, Japan
SOURCE: Solid State Ionics (2000), 135(1-4), 137-142
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 10 Jan 2001
AB Li3V2(PO4)3 and solid solns. of Li3-2x(V1-xZrx)2(PO4) 3 were prepared by a solid state reaction. A high temperature orthorhombic phase of Li3V2(PO4)3 with a β-Fe2(SO4)3-type was successfully stabilized at room temperature by substituting Zr for V with substitution ratios beyond x=0.05. The pure material of Li3V2(PO4)3 exhibited a cathode performance with two well defined regions of plateau at around 3.7 and 4.1 V vs. Li/Li+ upon charging and 3.6 and 4.0 V vs. Li/Li+ upon discharging, resp., suggesting two types of phases produced upon the charge/discharge process. On the other hand, the cathode performance of the orthorhombic stabilized materials showed almost the same charge/discharge voltages as those of the pure material, but, with two plateaus slightly sloping, showed a considerably improved charge/discharge cycle performance compared to that of the pure material. Such improvement on the charge/discharge cycle performance is suggested to come from the disordered lithium ion arrangement in the orthorhombic phase.
IT 323204-07-5, Lithium vanadium zirconium phosphate (Li2.8V1.8Zr0.2(PO4)3) 323204-08-6, Lithium vanadium zirconium phosphate (Li2.6V1.6Zr0.4(PO4)3)
(enhancement of discharge capacity of Li3V2(PO4)3 by stabilizing the orthorhombic phase at room temperature)
RN 323204-07-5 HCAPLUS
CN Lithium vanadium zirconium phosphate (Li2.8V1.8Zr0.2(PO4)3) (CA INDEX

NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.2	7440-67-7
V	1.8	7440-62-2
Li	2.8	7439-93-2

RN 323204-08-6 HCAPLUS
CN Lithium vanadium zirconium phosphate (Li2.6V1.6Zr0.4(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.4	7440-67-7
V	1.6	7440-62-2
Li	2.6	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 84159-18-2, Lithium vanadium phosphate(Li3V2(PO4)3) 323204-07-5, Lithium vanadium zirconium phosphate (Li2.8V1.8Zr0.2(PO4)3) 323204-08-6, Lithium vanadium zirconium phosphate (Li2.6V1.6Zr0.4(PO4)3)
(enhancement of discharge capacity of Li3V2(PO4)3 by stabilizing the orthorhombic phase at room temperature)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 34 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:774123 HCAPLUS Full-text
DOCUMENT NUMBER: 133:352634
TITLE: Electrode materials having increased surface conductivity
INVENTOR(S): Ravet, Nathalie; Besner, Simon; Simoneau, Martin; Vallee, Alain; Armand, Michel; Magnan, Jean-francois
PATENT ASSIGNEE(S): Hydro-Quebec, Can.
SOURCE: Eur. Pat. Appl., 22 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1049182	A2	20001102	EP 2000-401207 <--	20000502
EP 1049182	A3	20040211		
EP 1049182	B1	20080102		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2270771	A1	20001030	CA 1999-2270771 <--	19990430

CA 2307119	A1	20001030	CA 2000-2307119 <--	20000428
CA 2625896	A1	20001030	CA 2000-2625896 <--	20000428
JP 2001015111	A	20010119	JP 2000-132779 <--	20000501
EP 1796189	A2	20070613	EP 2007-4289 <--	20000502
EP 1796189	A3	20070620		
R: DE, FR, GB, IT				
US 20020195591	A1	20021226	US 2002-175794 <--	20020621
US 6855273	B2	20050215		
US 20040140458	A1	20040722	US 2003-740449 <--	20031222
US 6962666	B2	20051108		
US 20060060827	A1	20060323	US 2005-266339 <--	20051104
US 7344659	B2	20080318		
JP 2008186807	A	20080814	JP 2008-41303 <--	20080222

PRIORITY APPLN. INFO.:	CA 1999-2270771 <--	A	19990430
	CA 2000-2307119 <--	A3	20000428
	US 2000-560572 <--	B1	20000428
	JP 2000-132779 <--	A3	20000501
	EP 2000-401207 <--	A3	20000502
	US 2002-175794 <--	A3	20020621
	US 2003-740449 <--	A1	20031222

ED Entered STN: 05 Nov 2000

AB Intercalated electrode materials comprising complex oxides, especially Li oxides, are prepared, suitable for redox reaction by exchange of alkali metal ions (especially Li) and electrons with an electrolyte. The complex oxide electrodes can be used in batteries, supercapacitors or electrochromic light moderators. The complex oxides have the general formula AaMmZzOoNnFf, where A is alkali metal (e.g., Li), M is ≥1 transition metal (e.g., Fe, Mn, V, Ti, Mo, Nb, Zn, W), Z is ≥1 nonmetal (e.g., P, S, Si, Se, As, Ge, B, Sn), and a,m,z,o,n,f are chosen for elec. neutrality. A conductive carbon coating is formed or deposited on the surface of the electrode material, e.g., by pyrolysis of an organic material, hydrocarbons or polymers, for increased surface conductivity

IT 252943-50-3P, Lithium vanadium phosphate silicate Li3.5V2(PO4)2.5(SiO4)0.5
(electrode materials having increased surface conductivity)

RN 252943-50-3 HCAPLUS

CN Lithium vanadium phosphate silicate (Li3.5V2(PO4)2.5(SiO4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
V	2	7440-62-2

Li | 3.5 | 7439-93-2

IC ICM H01M004-58
ICS H01M004-48; H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72, 76
IT 7440-44-0P, Carbon, uses 15365-14-7P, Iron lithium phosphate (FeLiPO4) 30734-08-8P, Lithium manganese silicate Li2MnSiO4 39302-37-9P, Lithium titanium oxide 180984-63-8P, Lithium magnesium titanium oxide 252943-50-3P, Lithium vanadium phosphate silicate Li3.5V2(PO4)2.5(SiO4)0.5 304905-30-4P 304905-31-5P, Iron lithium fluoride (FeLi0.2F3) 304905-32-6P, Lithium manganese nitride oxide (Li3MnNO) 304905-33-7P 304905-34-8P 304905-35-9P, Lithium magnesium titanium oxide (Li3.5Mg0.5Ti4O12) 304905-36-0P, Iron lithium phosphorus silicon oxide 304905-37-1P 304905-38-2P, Iron lithium phosphorus fluoride oxide 304905-39-3P 304905-40-6P 304905-41-7P 304905-42-8P
(electrode materials having increased surface conductivity)

L25 ANSWER 35 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:725896 HCAPLUS Full-text
DOCUMENT NUMBER: 133:298811
TITLE: Method for manufacturing active material of positive plate for nonaqueous electrolyte secondary cell
INVENTOR(S): Li, Guohua; Yamada, Atsuo
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: PCT Int. Appl., 88 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000060679	A1	20001012	WO 2000-JP1915 <--	20000328
W: CA, CN, JP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2334386	A1	20001012	CA 2000-2334386 <--	20000328
EP 1094532	A1	20010425	EP 2000-911428 <--	20000328
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
TW 494595	B	20020711	TW 2000-89106123 <--	20000331

PRIORITY APPLN. INFO.:	JP 1999-99407 <--	A	19990406
	JP 1999-274746 <--	A	19990928
	JP 1999-274747 <--	A	19990928
	WO 2000-JP1915 <--	W	20000328

ED Entered STN: 13 Oct 2000

AB A method for manufacturing an active material of a pos. plate which is doped/dedoped well reversely with/of lithium comprises mixing materials including a reducing agent to be used as a synthetic material of a compound whose composition is expressed by a general formula LixMyPO4 (where 0<x≤2, 0.8≤y≤1.2, and M is at least one element selected from 3d-transition metals) to produce a precursor and firing the precursor..

IT 213467-46-0P, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(manufacture of active material of pos. plate for nonaq. electrolyte secondary cell)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

IC ICM H01M004-58
ICS H01M010-40; H01M004-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 13826-59-0P, Lithium manganese phosphate 213467-46-0P, Iron lithium manganese phosphate (FeLi2Mn(PO4)2)
(manufacture of active material of pos. plate for nonaq. electrolyte secondary cell)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 36 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:688509 HCAPLUS Full-text

DOCUMENT NUMBER: 133:255027

TITLE: Rechargeable lithium battery with lithium-containing phosphate active materials

INVENTOR(S): Barker, Jeremy

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000057505	A1	20000928	WO 2000-US4401 <--	20000222
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6153333	A	20001128	US 1999-274371	19990323

			<--	
CA 2367338	A1	20000928	CA 2000-2367338	20000222
			<--	
EP 1173897	A1	20020123	EP 2000-921341	20000222
			<--	
EP 1173897	B1	20080618		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, CY				
JP 2002540569	T	20021126	JP 2000-607293	20000222
			<--	
AU 764110	B2	20030807	AU 2000-41680	20000222
			<--	
US 6890686	B1	20050510	US 2001-936675	20000222
			<--	
AT 398840	T	20080715	AT 2000-921341	20000222
			<--	
MX 2001PA09565	A	20020311	MX 2001-PA9565	20010921
			<--	
IN 2001KN01067	A	20050708	IN 2001-KN1067	20011012
			<--	
PRIORITY APPLN. INFO.:			US 1999-274371	A1 19990323
			<--	
			WO 2000-US4401	W 20000222
			<--	

ED Entered STN: 29 Sep 2000

AB The invention provides novel lithium-containing phosphate materials having a high proportion of lithium per formula unit of the material. Upon electrochem. interaction, such material deintercalates lithium ions, and is capable of reversibly cycling lithium ions. The invention provides a rechargeable lithium battery which comprises an electrode formed from the novel lithium-containing phosphates.

IT 294664-30-5 294664-39-4 294664-56-5 294664-57-6 294664-59-8 294664-70-3 294664-72-5
(rechargeable lithium battery with lithium-containing phosphate active materials)

RN 294664-30-5 HCAPLUS

CN Lithium vanadium phosphate phosphorofluoridate (Li2.5V2(PO4)2.5(PFO3)0.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	2	7440-62-2
Li	2.5	7439-93-2

RN 294664-39-4 HCAPLUS

CN Lithium vanadium phosphate phosphorofluoridate (Li2V2(PO4)2(PFO3)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	1	15181-43-8
O4P	2	14265-44-2
V	2	7440-62-2
Li	2	7439-93-2

RN 294664-56-5 HCAPLUS
CN Lithium manganese vanadium phosphate phosphorofluoridate (Li2.5MnV(PO4)2.5(PFO3)0.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	1	7440-62-2
Mn	1	7439-96-5
Li	2.5	7439-93-2

RN 294664-57-6 HCAPLUS
CN Iron lithium vanadium phosphate phosphorofluoridate (Fe1.5Li2V0.5(PO4)2(PFO3)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	1	15181-43-8
O4P	2	14265-44-2
V	0.5	7440-62-2
Li	2	7439-93-2
Fe	1.5	7439-89-6

RN 294664-59-8 HCAPLUS
CN Lithium vanadium phosphate phosphorofluoridate (Li3V2(PO4)2.5(PFO3)0.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	2	7440-62-2
Li	3	7439-93-2

RN 294664-70-3 HCAPLUS
CN Lithium vanadium phosphate phosphorofluoridate (Li3V2(PO4)2(PFO3)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	1	15181-43-8
O4P	2	14265-44-2
V	2	7440-62-2
Li	3	7439-93-2

RN 294664-72-5 HCAPLUS
CN Lithium manganese vanadium phosphate phosphorofluoridate (Li3Mn0.5V1.5(PO4)2.5(PFO3)0.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	1.5	7440-62-2

Mn	0.5	7439-96-5
Li	3	7439-93-2

IC ICM H01M004-58
ICS H01M004-48; C01B025-30
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 294664-30-5 294664-39-4 294664-56-5 294664-57-6 294664-59-8 294664-70-3 294664-72-5
(rechargeable lithium battery with lithium-containing phosphate active materials)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 37 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:456288 HCAPLUS Full-text
DOCUMENT NUMBER: 133:216938
TITLE: CO2 gas sensor using lithium ionic conductor with inside heater
AUTHOR(S): Seo, M.-G.; Kang, B.-H.; Chai, Y.-S.; Song, K.-D.; Lee, D.-D.
CORPORATE SOURCE: Department of Electronic Engineering, Kyungpook National University, Taegu, 702-701, S. Korea
SOURCE: Sensors and Actuators, B: Chemical (2000), B65(1-3), 346-348
CODEN: SABCEB; ISSN: 0925-4005
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 07 Jul 2000
AB The raw material for Li ionic conductor (Li1+xZr2SixP3-xO12, where x is .apprx.2) was synthesized by sol-gel method. Eutectic mixture (Li2CO3:K2CO3:Na2CO3 = 47.0:25.6:27.4 weight %) was formed on the sensing electrode as an auxiliary material. For the wide range of CO2 concentration from 1000 to 10,000 ppm, the electromotive force examined at 420° showed excellent agreement with theor. value of a Nernst's equation. The 90% response time was as short as 15-20 s. In 40-90% relative humidity, the electromotive force slope of sensor for CO2 gas was 64-67 mV/decade. The long-term stability of the sensor was studied for 60 days.
IT 81295-89-8D, Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2), nonstoichiometric
(CO2 gas sensor using lithium ionic conductor with inside heater)
RN 81295-89-8 HCAPLUS
CN Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	2	17181-37-2
O4P	1	14265-44-2
Zr	2	7440-67-7
Li	3	7439-93-2

CC 79-2 (Inorganic Analytical Chemistry)
Section cross-reference(s): 72, 76
IT 81295-89-8D, Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2), nonstoichiometric

(CO2 gas sensor using lithium ionic conductor with inside heater)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 38 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:368796 HCAPLUS Full-text
DOCUMENT NUMBER: 133:7071
TITLE: Lithium based phosphates for use in lithium ion batteries and method of preparation
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: PCT Int. Appl., 69 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000031812	A1	20000602	WO 1999-US23074 <--	19991005
WO 2000031812	A9	20020822		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6447951	B1	20020910	US 1998-195961 <--	19981119
CA 2351332	A1	20000602	CA 1999-2351332 <--	19991005
AU 9965076	A	20000613	AU 1999-65076 <--	19991005
AU 764529	B2	20030821		
EP 1135819	A1	20010926	EP 1999-953046 <--	19991005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002530835	T	20020917	JP 2000-584544 <--	19991005
MX 2001PA04931	A	20040129	MX 2001-PA4931 <--	20010516

PRIORITY APPLN. INFO.:	US 1998-195961 <--	A1	19981119
	US 1996-717919 <--	A2	19960923
	WO 1999-US23074 <--	W	19991005

ED Entered STN: 04 Jun 2000
AB A Li ion battery comprises a first electrode having an active material in a first condition of the nominal general formula Li3-xM'yM''2-y(PO4)3, x = 0, y 0-2, and in a second condition of the nominal general formula Li3-xM'yM''2-y(PO4)3, x = 0-3; M'' is a transition metal and M' is a nontransition metal selected from the group consisting of metals and metalloids; a second

electrode which is a counter electrode to the first electrode; and an electrolyte between the electrodes.

IT 204653-32-7, Aluminum lithiumvanadium phosphate AlLi3V(PO4)3
(lithium based phosphates for use in lithium ion batteries and method of preparation)

RN 204653-32-7 HCAPLUS

CN Aluminum lithium vanadium phosphate (AlLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

IC ICM H01M004-58
ICS H01M010-40; C01B025-45

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate 84159-18-2, Lithium vanadium phosphate Li3V2(PO4)3 204653-32-7, Aluminum lithiumvanadium phosphate AlLi3V(PO4)3 270258-22-5
(lithium based phosphates for use in lithium ion batteries and method of preparation)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 39 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:197818 HCAPLUS Full-text

DOCUMENT NUMBER: 132:224820

TITLE: Lithium vanadium phosphate composite compound and its use as positive electrode for lithium ion secondary battery

INVENTOR(S): Sato, Mineo; Toda, Kenji; Imanaka, Nobuto

PATENT ASSIGNEE(S): Osaka University, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000086215	A	20000328	JP 1998-261930 <--	19980916
JP 2949229	B2	19990913		

PRIORITY APPLN. INFO.: JP 1998-261930 <-- 19980916

ED Entered STN: 28 Mar 2000

AB Lithium vanadium phosphate composite compds. have the following formula Liy(V1-xMx)2(PO4)3 where M is selected from aluminum, titanium and zirconium, 0<x≤0.2, and y is 3 when M is aluminum and or y is 3-2x when M is titanium or zirconium. The composite compound which possesses excellent charge-discharge behavior can be used as the pos. electrode for the lithium ion secondary battery.

IT 261515-93-9, Aluminum lithium vanadium phosphate

(Al0-0.2Li3V0.8-1(PO4)3) 261515-94-0, Lithium titanium vanadium phosphate (Li2.6-3Ti0-0.2V0.8-1(PO4)3) 261515-95-1, Lithium vanadium zirconium phosphate (Li2.6-3V0.8-1Zr0-0.2(PO4)3)
(lithium vanadium phosphate composite compound and its use as pos. electrode for lithium ion secondary battery)

RN 261515-93-9 HCAPLUS
CN Aluminum lithium vanadium phosphate (Al0-0.2Li3V0.8-1(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	0.8 - 1	7440-62-2
Li	3	7439-93-2
Al	0 - 0.2	7429-90-5

RN 261515-94-0 HCAPLUS
CN Lithium titanium vanadium phosphate (Li2.6-3Ti0-0.2V0.8-1(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	0.8 - 1	7440-62-2
Ti	0 - 0.2	7440-32-6
Li	2.6 - 3	7439-93-2

RN 261515-95-1 HCAPLUS
CN Lithium vanadium zirconium phosphate (Li2.6-3V0.8-1Zr0-0.2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0 - 0.2	7440-67-7
V	0.8 - 1	7440-62-2
Li	2.6 - 3	7439-93-2

IC ICM C01B025-45
ICS H01M004-02; H01M004-58; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 261515-93-9, Aluminum lithium vanadium phosphate (Al0-0.2Li3V0.8-1(PO4)3) 261515-94-0, Lithium titanium vanadium phosphate (Li2.6-3Ti0-0.2V0.8-1(PO4)3) 261515-95-1, Lithium vanadium zirconium phosphate (Li2.6-3V0.8-1Zr0-0.2(PO4)3)
(lithium vanadium phosphate composite compound and its use as pos. electrode for lithium ion secondary battery)

L25 ANSWER 40 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:15552 HCAPLUS Full-text
DOCUMENT NUMBER: 132:52431
TITLE: Method of preparation of lithium-containing silicophosphates for electrode active material of lithium batteries
INVENTOR(S): Barker, Jeremy
PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000001024	A1	20000106	WO 1999-US11217 <--	19990520
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6136472	A	20001024	US 1998-105748 <--	19980626
CA 2333577	A1	20000106	CA 1999-2333577 <--	19990520
AU 9940918	A	20000117	AU 1999-40918 <--	19990520
EP 1090435	A1	20010411	EP 1999-924410 <--	19990520
EP 1090435	B1	20040804		
R: DE, ES, FR, GB, IT, IE				
JP 2002519836	T	20020702	JP 2000-557507 <--	19990520
EP 1282181	A2	20030205	EP 2002-25070 <--	19990520
EP 1282181	A3	20050330		
R: DE, ES, FR, GB, IT, IE				
HK 1036883	A1	20050429	HK 2001-105569 <--	20010810

PRIORITY APPLN. INFO.:
US 1998-105748 A1 19980626 <--
EP 1999-924410 A3 19990520 <--
WO 1999-US11217 W 19990520 <--

ED Entered STN: 07 Jan 2000

AB The invention provides a new electrode active material and cells and batteries which utilize such active material. The active material is represented by the nominal general formula LiaM'(2-b)M"bSicP(3-c)O12, $0 \leq b \leq 2$, $0 < c < 3$. M' and M" are each elements selected from the group consisting of metal and metalloid elements. The value of the variable a depends upon the selection of M' and M" and on the relative proportions designated as b and c.

IT 252943-44-5, Lithium vanadium phosphate silicate (Li3V2(PO4)2(SiO4)) 252943-46-7 252943-47-8 252943-48-9 252943-49-0 252943-50-3, Lithium vanadium phosphate silicate (Li3.5V2(PO4)2.5(SiO4)0.5) 252943-51-4
(method of preparation of lithium-containing silicophosphates for electrode active material of lithium batteries)

RN 252943-44-5 HCAPLUS

CN Lithium vanadium phosphate silicate (Li3V2(PO4)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
V	2	7440-62-2
Li	3	7439-93-2

RN 252943-46-7 HCAPLUS
CN Lithium manganese vanadium phosphate silicate (Li3MnV(PO4)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
V	1	7440-62-2
Mn	1	7439-96-5
Li	3	7439-93-2

RN 252943-47-8 HCAPLUS
CN Lithium titanium vanadium phosphate silicate (Li3TiV(PO4)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
V	1	7440-62-2
Ti	1	7440-32-6
Li	3	7439-93-2

RN 252943-48-9 HCAPLUS
CN Chromium lithium titanium phosphate silicate (CrLi3Ti(PO4)2(SiO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
Cr	1	7440-47-3
Ti	1	7440-32-6
Li	3	7439-93-2

RN 252943-49-0 HCAPLUS
CN Aluminum lithium vanadium phosphate silicate (AlLi3.5V(PO4)2.5(SiO4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
V	1	7440-62-2
Li	3.5	7439-93-2
Al	1	7429-90-5

RN 252943-50-3 HCAPLUS
CN Lithium vanadium phosphate silicate (Li3.5V2(PO4)2.5(SiO4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
V	2	7440-62-2
Li	3.5	7439-93-2

RN 252943-51-4 HCAPLUS
CN Aluminum chromium lithium phosphate silicate (AlCrLi3.5(PO4)2.5(SiO4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
Cr	1	7440-47-3
Li	3.5	7439-93-2
Al	1	7429-90-5

IC ICM H01M004-58
ICS H01M010-40; C01B025-45
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 252943-44-5, Lithium vanadium phosphate silicate (Li3V2(PO4)2(SiO4)) 252943-46-7 252943-47-8 252943-48-9 252943-49-0 252943-50-3, Lithium vanadium phosphate silicate (Li3.5V2(PO4)2.5(SiO4)0.5) 252943-51-4
(method of preparation of lithium-containing silicophosphates for electrode active material of lithium batteries)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 41 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1999:661912 HCAPLUS Full-text
DOCUMENT NUMBER: 131:324968
TITLE: Improvement of discharge capacity of β-Fe2(SO4)3-type Li3V2(PO4)3 by stabilizing high temperature orthorhombic phase at room temperature
AUTHOR(S): Ohkawa, Hirokazu; Yoshida, Kenji; Saito, Mai; Uematsu, Kazuyoshi; Toda, Kenji; Sato, Mineo
CORPORATE SOURCE: Department of Chemistry and Chemical Engineering, Faculty of Engineering, Niigata University, Niigata, 950-2181, Japan
SOURCE: Chemistry Letters (1999), (10), 1017-1018
CODEN: CMLTAG; ISSN: 0366-7022
PUBLISHER: Chemical Society of Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 18 Oct 1999

AB The cathode performance of a lithium ion battery was investigated for β-Fe2(SO4)3-type Li3V2(PO4)3 and Li3(V1-xZrx)2(PO4)3 (x=0.05, 0.1, 0.15, 0.2). On TG-DTA measurements, Li3V2(PO4)3 exhibited two types of phase transition, while Li3(V1-xZrx)2(PO4)3 exhibited no phase transition. Powder X-ray diffraction anal. and conductivity measurements confirmed an evidence for the stabilization of the high temperature phase at room temperature The discharge capacity of the Zr-substituted Li3(V1-xZrx)2(PO4)3 samples became much larger than that of the pure Li3V2(PO4)3 sample.

IT 248263-63-0, Lithium vanadium zirconium phosphate (Li3V1.9Zr0.1(PO4)3) 248263-64-1, Lithium vanadium zirconium phosphate (Li3V1.8Zr0.2(PO4)3) 248263-65-2, Lithium vanadium zirconium phosphate (Li3V1.7Zr0.3(PO4)3) 248263-66-3, Lithium vanadium zirconium phosphate (Li3V1.6Zr0.4(PO4)3)
(improvement of discharge capacity of β-Fe2(SO4)3-type Li3V2(PO4)3 by stabilizing high temperature orthorhombic phase at room temperature)

RN 248263-63-0 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li3V1.9Zr0.1(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.1	7440-67-7
V	1.9	7440-62-2
Li	3	7439-93-2

RN 248263-64-1 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li3V1.8Zr0.2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.2	7440-67-7
V	1.8	7440-62-2
Li	3	7439-93-2

RN 248263-65-2 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li3V1.7Zr0.3(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.3	7440-67-7
V	1.7	7440-62-2
Li	3	7439-93-2

RN 248263-66-3 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li3V1.6Zr0.4(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2

Zr	0.4	7440-67-7
V	1.6	7440-62-2
Li	3	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 84159-18-2, Lithium vanadium phosphate Li3V2(PO4)3 248263-63-0, Lithium vanadium zirconium phosphate (Li3V1.9Zr0.1(PO4)3) 248263-64-1, Lithium vanadium zirconium phosphate (Li3V1.8Zr0.2(PO4)3) 248263-65-2, Lithium vanadium zirconium phosphate (Li3V1.7Zr0.3(PO4)3) 248263-66-3, Lithium vanadium zirconium phosphate (Li3V1.6Zr0.4(PO4)3)
(improvement of discharge capacity of β-Fe2(SO4)3-type Li3V2(PO4)3 by stabilizing high temperature orthorhombic phase at room temperature)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 42 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1999:329765 HCAPLUS Full-text
DOCUMENT NUMBER: 131:62048
TITLE: Effect of the ion substitution on the ionic conductivity of solid electrolytes based on lithium titanium phosphate
AUTHOR(S): Kang, Eun-Tae; Wee, Hong-Bok; Kwon, Young-Jean
CORPORATE SOURCE: Department of Inorganic Materials Engineering, Gyeongsang National University, Gyeongnam, 660-701, S. Korea
SOURCE: Yoop Hakhoechi (1999), 36(4), 380-390
CODEN: YPHJAP; ISSN: 0372-7807
PUBLISHER: Korean Ceramic Society
DOCUMENT TYPE: Journal
LANGUAGE: Korean
ED Entered STN: 28 May 1999

AB Li1+xTi2SixP3-xO12, Li1+2xTi2AlxP3-xO12, and Li1+xTi2-xAlx(PO4)3 (0≤x≤0.5) were synthesized, and the structure, the d. and the ionic conductivity of samples were investigated. The main structure was a LiTi2(PO4)3 (S.G: R-3CH) phase over all systems, except for Li1+2xTi2AlxP3-xO12 system in the range of x≥0.4 which had LiTiPO5 (S.G: Pnma) as a main phase. The d. and the conductivity of samples increased with increasing x, but decreased by the precipitation of the second phase. Consequently the ionic conductivity of these system could be increased by increasing the d. and decreased by precipitating the second phases. The highest ionic conductivity of 1.29 + 10-3 Scm-1 at 25°C was obtained in Li1.3Ti2Si0.3P2.7O12.

IT 228266-12-4
(solid electrolytes; effects of Al and Si ion substitution on the ionic conductivity of lithium titanium phosphate solid electrolytes)

RN 228266-12-4 HCAPLUS
CN Aluminum lithium titanium oxide phosphate (Al0.5Li2Ti2O2(PO4)2.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
O4P	2.5	14265-44-2
Ti	2	7440-32-6
Li	2	7439-93-2

Al | 0.5 | 7429-90-5

CC 57-2 (Ceramics)
Section cross-reference(s): 52
IT 30622-39-0, Lithium titanium phosphate LiTi2(PO4)3 120479-61-0, Aluminum lithium titanium phosphate Al0.3Li1.3Ti1.7(PO4)3 127660-09-7, Lithium titanium phosphate silicate (Li1.4Ti2(PO4)2.6(SiO4)0.4) 127660-10-0, Lithium phosphorus silicon titanium oxide Li1.3P2.7Si0.3Ti2O12 127660-11-1, Lithium titanium phosphate silicate (Li1.2Ti2(PO4)2.8(SiO4)0.2) 127672-84-8, Lithium titanium phosphate silicate (Li1.5Ti2(PO4)2.5(SiO4)0.5) 131266-83-6, Aluminum lithium titanium phosphate Al0.5Li1.5Ti1.5(PO4)3 138198-90-0, Lithium titanium oxide phosphate LiTiO(PO4) 159157-31-0, Aluminum lithium titanium phosphate Al0.4Li1.4Ti1.6(PO4)3 163119-08-2, Aluminum lithium titanium phosphate Al0.2Li1.2Ti1.8(PO4)3 214119-31-0, Aluminum lithium titanium phosphate Al0.1Li1.1Ti1.9(PO4)3 228266-07-7, Lithium titanium phosphate silicate (Li1.1Ti2(PO4)2.9(SiO4)0.1) 228266-08-8 228266-09-9 228266-10-2 228266-11-3 228266-12-4
(solid electrolytes; effects of Al and Si ion substitution on the ionic conductivity of lithium titanium phosphate solid electrolytes)
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 43 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1998:509379 HCAPLUS Full-text
DOCUMENT NUMBER: 129:191547
ORIGINAL REFERENCE NO.: 129:38873a,38876a
TITLE: Nonaqueous-electrolyte lithium secondary battery having high discharge capacity
INVENTOR(S): Nagata, Mikito; Karril, Amin; Tsukamoto, Kotobuki
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10208730	A	19980807	JP 1997-25985 <--	19970124
PRIORITY APPLN. INFO.:			JP 1997-25985 <--	19970124

ED Entered STN: 17 Aug 1998
AB In the title battery, cathode contains a Li-containing metal oxide as an active mass and another substance having Li+-discharging potential higher than that of the metal oxide and of amount corresponding to an amount of Li+ consumed in the initial charging. Preferably, the substance is selected from Li1+xMn2O4 (X = 0-1), Li2NiO2, LiMnO2, Li2Mn2-xMxO4 (M = Co, Ni, Zn, Mg, Fe; X = 0-2), Li2Mn1.5Ni0.5O4, LixVO3 (X = 1-6), Li3Fe2(PO4)3, Li3Fe2(SO4)3, Li3FeV(PO4)3, and Li3V(PO4)3. Anode in the battery may be selected from graphite, coke, (amorphous) carbon, SnO, SnO2, Sn1-xMxO (M = Hg, P, B, Si, Ge Sb; 0 ≤ X < 1), Sn1-xMxO2 (M = Hg, P, B, Si, Ge, Sb; 0 ≤ X < 1), Sn3O2(OH)2, Sn3-xMxO2(OH)2 (M = Mg, P, B, Si, Ge, Sb, As, Mn; 0 ≤ X < 3), LiSiO2, SiO2, and LiSnO2. Lack of Li+ consumed in formation of a surficial film on the anode and Li+ trapped in the anode both occurring in the initial charging is supplemented by the substance.

IT 186131-68-0, Iron lithium vanadium phosphate (FeLi3V(PO4)3)
211753-59-2, Lithium vanadium phosphate (Li3V(PO4)3)
(lithium ion supplier in cathode; Li secondary batteries with cathodes containing Li metal oxide and Li+ supplier additives)
RN 186131-68-0 HCAPLUS
CN Iron lithium vanadium phosphate (FeLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

RN 211753-59-2 HCAPLUS
CN Lithium vanadium phosphate (Li3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2

IC ICM H01M004-02
ICS H01M004-58; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium manganese oxide (LiMnO2) 12325-84-7, Lithium nickel oxide (Li2NiO2) 36058-25-0, Lithium iron phosphate [Li3Fe2(PO4)3] 123550-86-7, Lithium manganese oxide (Li0.5-1MnO2) 186131-68-0, Iron lithium vanadium phosphate (FeLi3V(PO4)3) 200938-46-1, Lithium manganese nickel oxide (Li2Mn1.5Ni0.5O4) 211753-57-0, Lithium vanadium oxide (Li1-6VO3) 211753-58-1, Iron lithium sulfate (Fe2Li3(SO4)3) 211753-59-2, Lithium vanadium phosphate (Li3V(PO4)3)
(lithium ion supplier in cathode; Li secondary batteries with cathodes containing Li metal oxide and Li+ supplier additives)

L25 ANSWER 44 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1998:404670 HCAPLUS Full-text
DOCUMENT NUMBER: 129:97673
ORIGINAL REFERENCE NO.: 129:20091a,20094a
TITLE: Characteristics of 3D framework cathodes with (XO4)n- polyanions
AUTHOR(S): Okada, S.; Arai, H.; Asakura, K.; Sakurai, Y.; Yamaki, J.; Nanjundaswamy, K. S.; Padhi, A. K.; Masquelier, C.; Goodenough, J. B.
CORPORATE SOURCE: NTT Integrated Information and Energy Systems Laboratories, Ibaraki, 319-11, Japan
SOURCE: Progress in Batteries & Battery Materials (1997), 16, 302-308
CODEN: PBBMEF; ISSN: 1099-4467
PUBLISHER: ITE-JEC Press Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 02 Jul 1998

AB In an effort to identify alternate NASICON related framework hosts for Li intercalation, we have investigated the synthesis and electrochem. characterization of 3 inexpensive, environmentally benign phosphates containing Fe and V, viz. Li3Fe2(PO4)3, Li3V2(PO4)3, and Li3FeV(PO4)3. The compds. are synthesized by a one-step solid state reaction. The redox voltages V4+/V3+ and Fe3+/Fe3+ in these compds. are tech. attractive for Li rechargeable battery applications. Moreover, the octahedral-site redox couples V4+/V3+ and V3+/V2+ are separated by 2.0 V, and both the Fe3+/Fe2+ and V3+/V2+ redox voltages get reduced by 0.8 V on going from the sulfate to the phosphate polyanion.

IT 186131-68-0, Iron lithium vanadiumphosphate FeLi3V(PO4)3
(characteristics of 3D framework cathodes with (XO4)n- polyanions)

RN 186131-68-0 HCAPLUS

CN Iron lithium vanadium phosphate (FeLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 36058-25-0, Iron lithium phosphate Fe2Li3(PO4)3 84159-18-2, Lithium vanadium phosphate Li3V2(PO4)3 186131-68-0, Iron lithium vanadiumphosphate FeLi3V(PO4)3
(characteristics of 3D framework cathodes with (XO4)n- polyanions)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 45 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:221666 HCAPLUS Full-text

DOCUMENT NUMBER: 129:20826

ORIGINAL REFERENCE NO.: 129:4335a,4338a

TITLE: New cathode materials for rechargeable lithium batteries: the 3-D framework structures Li3Fe2(XO4)3 (X = P, As)

AUTHOR(S): Masquelier, C.; Padhi, A. K.; Nanjundaswamy, K. S.; Goodenough, J. B.

CORPORATE SOURCE: Center for Materials Science and Engineering, University of Texas at Austin, Austin, TX, 78712-1063, USA

SOURCE: Journal of Solid State Chemistry (1998), 135(2), 228-234
CODEN: JSSCBI; ISSN: 0022-4596

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 22 Apr 1998

AB Electrochem. insertion of lithium into four Li3Fe2(XO4)3 polymorphs (X = P or As) with 3-D framework structures was carried out in "Li/LiClO4 (PC:DME)/cathode" coin cells. Approx. 2 Li per formula unit could be reversibly inserted into the three different structures, which corresponds to the reduction of all Fe3+ to Fe2+ between 2.5 and 3.5 V vs lithium. The position of the Fe3+/Fe2+ redox couple below the lithium-anode Fermi energy is nearly independent of the structure and of whether X = P or As. There is, however, a clear dependence of (i) the shape of the Vcc vs x curves for

Li3+xFe2(XO4)3 and (ii) the charge-discharge rate capabilities on the crystal structure of the cathode material.

IT 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3)
(new cathode materials for rechargeable lithium batteries: 3-D framework structures Li3Fe2(XO4)3 (X = P, As))

RN 198782-41-1 HCAPLUS

CN Iron lithium phosphate (Fe2Li3-5(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	3 - 5	7439-93-2
Fe	2	7439-89-6

CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 56

IT 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3)
(new cathode materials for rechargeable lithium batteries: 3-D framework structures Li3Fe2(XO4)3 (X = P, As))

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 46 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:197714 HCAPLUS Full-text

DOCUMENT NUMBER: 128:232794

ORIGINAL REFERENCE NO.: 128:46045a,46048a

TITLE: Lithium-containing, lithium-intercalating phosphates and their use as electrode material in secondary lithium-ion battery

INVENTOR(S): Barker, Jeremy; Saidi, Mohamed-Yazid

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9812761	A1	19980326	WO 1997-US15544 <--	19970904
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5871866	A	19990216	US 1996-717979 <--	19960923
CA 2266365	A1	19980326	CA 1997-2266365 <--	19970904
AU 9744102	A	19980414	AU 1997-44102 <--	19970904
EP 931361	A1	19990728	EP 1997-942393 <--	19970904

EP 931361	B1	20011205			
R: DE, ES, FR, GB, IT, IE					
JP 2001500665	T	20010116	JP 1998-514693 <--		19970904
EP 1093174	A1	20010418	EP 2001-200220 <--		19970904
EP 1093174	B1	20031217			
R: DE, ES, FR, GB, IT, IE					
ES 2169425	T3	20020701	ES 1997-942393 <--		19970904
EP 1403945	A1	20040331	EP 2003-25462 <--		19970904
EP 1403945	B1	20060301			
R: DE, ES, FR, GB, IT, IE					
ES 2258196	T3	20060816	ES 2003-25462 <--		19970904
KR 2000036230	A	20000626	KR 1999-702302 <--		19990318
HK 1023850	A1	20020823	HK 2000-100559 <--		20000128
US 20010021472	A1	20010913	US 2001-776843 <--		20010205
US 6720110	B2	20040413			
PRIORITY APPLN. INFO.:			US 1996-717979 <--	A1	19960923
			EP 1997-942393 <--	A3	19970904
			WO 1997-US15544 <--	W	19970904
			US 1998-204944 <--	A1	19981203
			EP 2001-200220 <--	A3	20010123

ED Entered STN: 06 Apr 1998

AB The phosphates comprise Li(3-x)MM'(PO4)3, where in the 1st condition x = 0, at least 1 of M and M' is a metal, and M and M' are the same or different from one another; and in the 2nd condition 0 <x ≤3 and at least 1 of M and M' has an oxidation state higher than its oxidation state in the 1st condition P compound One of M and M' is selected from Mg, Ca, Cu, Co, Fe, Ni, Mo, V, Cr, Mn, and Ti. The phosphates comprise Li3V2(PO4)3, Li3VTi(PO4)3, Li3Fe2(PO4)3, and Li3FeV(PO4)3.

IT 186131-68-0, Iron lithium vanadium phosphate (FeLi3V(PO4)3)
204653-31-6, Lithium titanium vanadium phosphate (Li3TiV(PO4)3) 204653-32-7, Aluminum lithium vanadium phosphate (AlLi3V(PO4)3) 204653-33-8, Chromium lithium potassium phosphate (CrLi3K(PO4)3) 204653-34-9, Lithium molybdenum potassium phosphate (Li3MoK(PO4)3)
(electrode material for secondary lithium-ion battery)

RN 186131-68-0 HCAPLUS

CN Iron lithium vanadium phosphate (FeLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

RN 204653-31-6 HCAPLUS

CN Lithium titanium vanadium phosphate (Li3TiV(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Ti	1	7440-32-6
Li	3	7439-93-2

RN 204653-32-7 HCAPLUS
CN Aluminum lithium vanadium phosphate (AlLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

RN 204653-33-8 HCAPLUS
CN Chromium lithium potassium phosphate (CrLi3K(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Cr	1	7440-47-3
K	1	7440-09-7
Li	3	7439-93-2

RN 204653-34-9 HCAPLUS
CN Lithium molybdenum potassium phosphate (Li3MoK(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
K	1	7440-09-7
Mo	1	7439-98-7
Li	3	7439-93-2

IC ICM H01M004-58
ICS H01M004-52; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 36058-25-0, Iron lithium phosphate (Fe2Li3(PO4)3) 186131-68-0, Iron lithium vanadium phosphate (FeLi3V(PO4)3) 204653-31-6, Lithium titanium vanadium phosphate (Li3TiV(PO4)3) 204653-32-7, Aluminum lithium vanadium phosphate (AlLi3V(PO4)3) 204653-33-8, Chromium lithium potassium phosphate (CrLi3K(PO4)3) 204653-34-9, Lithium molybdenum potassium phosphate (Li3MoK(PO4)3)
(electrode material for secondary lithium-ion battery)
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 47 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:32205 HCAPLUS Full-text
DOCUMENT NUMBER: 128:90963
ORIGINAL REFERENCE NO.: 128:17737a,17740a
TITLE: Stabilization of superionic conduction phase in Li3Sc2(PO4)3
AUTHOR(S): Suzuki, Takahito; Yoshida, Kenji; Uematsu, Kazuyoshi; Kodama, Tatsuya; Toda, Kenji; Ye, Zuo-Guange; Sato, Mineo
CORPORATE SOURCE: Department of Active Material Chemistry, Niigata University, Niigata, 950-21, Japan
SOURCE: Solid State Ionics (1997), 104(1,2), 27-33
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 21 Jan 1998
AB Lithium superion conductors, Li3+2x(Sc1-xMgx)2(PO4)3, Li3-2x(Sc1-xMx)2(PO4)3 (M = Ti, Zr, Sn, Hf) and Li3-4x(Sc1-xMx)2(PO4)3 (M = Nb, Ta) were prepared by a solid-state reaction. TG-DTA anal. indicated no phase transition in Li3+2x(Sc1-xMgx)2(PO4)3 and Li3-2x(Sc1-xMx)2(PO4)3 (M = Ti, Zr, Sn, Hf) with x higher than 0.05, and in Li3-4x(Sc1-xMx)2(PO4)3 (M = Nb, Ta) with x higher than 0.025. The room temperature ionic conductivity of Li3Sc2(PO4)3 has been increased by three orders of magnitude with the highest conductivity observed in Li3-2x(Sc1-xTix)2(PO4)3 with x = 0.20 and in Li3-2x(Sc1-xZrx)2(PO4)3 with x = 0.10. It was ascribed to the stabilization of the high temperature superionic conduction phase and the introduction of vacancies on the Li+ sites by substituting Ti4+ or Zr4+ for Sc3+.
IT 190652-55-2, Lithium scandium zirconium phosphate Li2.8Sc1.8Zr0.2(PO4)3 201036-54-6, Lithium scandium titanium phosphate (Li2.95Sc1.95Ti0.05(PO4)3) 201036-55-7, Lithium scandium titanium phosphate (Li2.9Sc1.9Ti0.1(PO4)3) 201036-56-8, Lithium scandium titanium phosphate (Li2.8Sc1.8Ti0.2(PO4)3) 201036-57-9, Lithium scandium titanium phosphate (Li2.6Sc1.6Ti0.4(PO4)3) 201036-58-0, Lithium scandium titanium phosphate (Li2.4Sc1.4Ti0.6(PO4)3) 201036-63-7, Lithium niobium scandium phosphate (Li2.96Nb0.02Sc1.98(PO4)3) 201036-64-8, Lithium niobium scandium phosphate (Li2.9Nb0.05Sc1.95(PO4)3) 201036-67-1, Lithium scandium titanium phosphate (Li2.4Sc1.6Ti0.4(PO4)3) 201036-68-2, Lithium niobium scandium phosphate (Li2.8Nb0.1Sc1.9(PO4)3) 201036-69-3, Lithium niobium scandium phosphate (Li2.7Nb0.15Sc1.85(PO4)3) 201036-70-6, Lithium niobium scandium phosphate (Li2.6Nb0.2Sc1.8(PO4)3)
(stabilization of superionic conduction phase in Li3Sc2(PO4)3)
RN 190652-55-2 HCAPLUS
CN Lithium scandium zirconium phosphate (Li2.8Sc1.8Zr0.2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.2	7440-67-7
Sc	1.8	7440-20-2
Li	2.8	7439-93-2

RN 201036-54-6 HCAPLUS
CN Lithium scandium titanium phosphate (Li2.95Sc1.95Ti0.05(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.05	7440-32-6
Sc	1.95	7440-20-2
Li	2.95	7439-93-2

RN 201036-55-7 HCAPLUS
CN Lithium scandium titanium phosphate (Li2.9Sc1.9Ti0.1(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1	7440-32-6
Sc	1.9	7440-20-2
Li	2.9	7439-93-2

RN 201036-56-8 HCAPLUS
CN Lithium scandium titanium phosphate (Li2.8Sc1.8Ti0.2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.2	7440-32-6
Sc	1.8	7440-20-2
Li	2.8	7439-93-2

RN 201036-57-9 HCAPLUS
CN Lithium scandium titanium phosphate (Li2.6Sc1.6Ti0.4(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.4	7440-32-6
Sc	1.6	7440-20-2
Li	2.6	7439-93-2

RN 201036-58-0 HCAPLUS
CN Lithium scandium titanium phosphate (Li2.4Sc1.4Ti0.6(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.6	7440-32-6
Sc	1.4	7440-20-2
Li	2.4	7439-93-2

RN 201036-63-7 HCAPLUS
CN Lithium niobium scandium phosphate (Li2.96Nb0.02Sc1.98(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.98	7440-20-2
Nb	0.02	7440-03-1
Li	2.96	7439-93-2

RN 201036-64-8 HCAPLUS
CN Lithium niobium scandium phosphate (Li2.9Nb0.05Sc1.95(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.95	7440-20-2
Nb	0.05	7440-03-1
Li	2.9	7439-93-2

RN 201036-67-1 HCAPLUS
CN Lithium scandium titanium phosphate (Li2.4Sc1.6Ti0.4(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.4	7440-32-6
Sc	1.6	7440-20-2
Li	2.4	7439-93-2

RN 201036-68-2 HCAPLUS
CN Lithium niobium scandium phosphate (Li2.8Nb0.1Sc1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.9	7440-20-2
Nb	0.1	7440-03-1
Li	2.8	7439-93-2

RN 201036-69-3 HCAPLUS
CN Lithium niobium scandium phosphate (Li2.7Nb0.15Sc1.85(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.85	7440-20-2
Nb	0.15	7440-03-1
Li	2.7	7439-93-2

RN 201036-70-6 HCAPLUS
CN Lithium niobium scandium phosphate (Li2.6Nb0.2Sc1.8(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.8	7440-20-2
Nb	0.2	7440-03-1
Li	2.6	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
IT 87796-15-4, Lithium scandium phosphate Li3Sc2(PO4)3 190652-55-2, Lithium scandium zirconium phosphate Li2.8Sc1.8Zr0.2(PO4)3 201036-54-6, Lithium scandium titanium phosphate (Li2.95Sc1.95Ti0.05(PO4)3) 201036-55-7, Lithium scandium titanium phosphate (Li2.9Sc1.9Ti0.1(PO4)3) 201036-56-8, Lithium scandium titanium phosphate (Li2.8Sc1.8Ti0.2(PO4)3) 201036-57-9, Lithium scandium titanium phosphate (Li2.6Sc1.6Ti0.4(PO4)3) 201036-58-0, Lithium scandium titanium phosphate (Li2.4Sc1.4Ti0.6(PO4)3) 201036-59-1, Lithium magnesium scandium phosphate (Li3.05Mg0.05Sc2.95(PO4)) 201036-60-4, Lithium magnesium scandium phosphate (Li3.2Mg0.2Sc1.8(PO4)) 201036-63-7, Lithium niobium scandium phosphate (Li2.96Nb0.02Sc1.98(PO4)3) 201036-64-8, Lithium niobium scandium phosphate (Li2.9Nb0.05Sc1.95(PO4)3) 201036-65-9, Lithium magnesium scandium phosphate (Li3.1Mg0.1Sc1.9(PO4)) 201036-66-0, Lithium magnesium scandium phosphate (Li3.3Mg0.3Sc1.7(PO4)) 201036-67-1, Lithium scandium titanium phosphate (Li2.4Sc1.6Ti0.4(PO4)3) 201036-68-2, Lithium niobium scandium phosphate (Li2.8Nb0.1Sc1.9(PO4)3) 201036-69-3, Lithium niobium scandium phosphate (Li2.7Nb0.15Sc1.85(PO4)3) 201036-70-6, Lithium niobium scandium phosphate (Li2.6Nb0.2Sc1.8(PO4)3)
(stabilization of superionic conduction phase in Li3Sc2(PO4)3)
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 48 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1997:718093 HCAPLUS Full-text
DOCUMENT NUMBER: 128:5716
ORIGINAL REFERENCE NO.: 128:1139a,1142a
TITLE: Cathode materials for secondary alkali metal-ion and lithium-ion batteries
INVENTOR(S): Goodenough, John B.; Padhi, Akshaya; Nanjundaswamy, K. S.; Masquelier, Christian
PATENT ASSIGNEE(S): Board of Regents, the University of Texas System, USA
SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9740541	A1	19971030	WO 1997-US6671 <--	19970423

W: CA, JP
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

CA 2251709	A1	19971030	CA 1997-2251709 <--	19970423
CA 2251709	C	20060801		
CA 2543784	A1	19971030	CA 1997-2543784 <--	19970423
EP 904607	A1	19990331	EP 1997-923437 <--	19970423
EP 904607	B1	20041027		
R: DE, FR, GB, IT				
JP 2000509193	T	20000718	JP 1997-538259 <--	19970423
EP 1501137	A2	20050126	EP 2004-22447 <--	19970423
EP 1501137	A3	20061025		
R: DE, FR, GB, IT				
EP 1755182	A1	20070221	EP 2006-20470 <--	19970423
R: DE, FR, GB, IT				
EP 1755183	A1	20070221	EP 2006-21083 <--	19970423
R: DE, FR, GB, IT				
JP 2007214147	A	20070823	JP 2007-128682 <--	20070514
JP 2007294463	A	20071108	JP 2007-128681 <--	20070514

PRIORITY APPLN. INFO.:	US 1996-16060P <--	P	19960423
	US 1996-32346P <--	P	19961204
	CA 1997-2251709 <--	A3	19970423
	EP 1997-923437 <--	A3	19970423
	EP 2004-22447 <--	A3	19970423
	JP 1997-538259 <--	A3	19970423
	WO 1997-US6671 <--	W	19970423

ED Entered STN: 13 Nov 1997

AB The cathode materials are LiMPO4, where M is ≥1 1st-row transition-metal cation; Mn, Fe, Co, and/or Ni; or Fe1-xMnx or Fe1-xTix, where 0 <x <1. The cathode materials comprise a rhombohedral Nasicon material M1xM2(PO4)3, where M1 is Li or Na and x ≤5.

IT 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3)
198782-42-2, Iron lithium phosphate sulfate (Fe2Li1-3(PO4)(SO4)2)
(cathode materials for secondary lithium-ion batteries)

RN 198782-41-1 HCAPLUS

CN Iron lithium phosphate (Fe2Li3-5(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	3 - 5	7439-93-2
Fe	2	7439-89-6

RN 198782-42-2 HCAPLUS
CN Iron lithium phosphate sulfate (Fe2Li1-3(PO4)(SO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	2	14808-79-8
O4P	1	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

IT 198782-44-4, Lithium niobium titanium phosphate (Li0-2NbTi(PO4)3) 198782-45-5, Iron lithium niobium phosphate (FeLi1-3Nb(PO4)3)
(cathode materials for secondary lithium-ion batteries)
RN 198782-44-4 HCAPLUS
CN Lithium niobium titanium phosphate (Li0-2NbTi(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Li	0 - 2	7439-93-2

RN 198782-45-5 HCAPLUS
CN Iron lithium niobium phosphate (FeLi1-3Nb(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Nb	1	7440-03-1
Li	1 - 3	7439-93-2
Fe	1	7439-89-6

IC ICM H01M004-58
ICS C01B025-26
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT 15365-14-7, Iron lithium phosphate (LiFePO4) 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4)) 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3) 198782-42-2, Iron lithium phosphate sulfate (Fe2Li1-3(PO4)(SO4)2) 951777-58-5, Lithium sodium vanadium phosphate (Li2NaV2(PO4)3)
(cathode materials for secondary lithium-ion batteries)
IT 11123-44-7 59205-70-8 198782-44-4, Lithium niobium titanium phosphate (Li0-2NbTi(PO4)3) 198782-45-5, Iron lithium niobium phosphate (FeLi1-3Nb(PO4)3)
(cathode materials for secondary lithium-ion batteries)

L25 ANSWER 49 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1997:469779 HCAPLUS Full-text
DOCUMENT NUMBER: 127:97562
ORIGINAL REFERENCE NO.: 127:18749a,18752a
TITLE: Cathode active mass for lithium secondary batteries and the batteries

INVENTOR(S): Hikuma, Koichiro
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09171827	A	19970630	JP 1995-350114 <--	19951221
JP 3319258	B2	20020826		
PRIORITY APPLN. INFO.:			JP 1995-350114 <--	19951221

ED Entered STN: 26 Jul 1997
AB The cathode active mass is LixFe2PO4 (0 < x ≤ 1.0). The batteries show stable discharge voltage.
IT 192194-51-7P, Iron lithium phosphate (Fe2Li1-2(PO4))
(cathodes; Fe Li phosphate cathode active mass for Li secondary batteries)
RN 192194-51-7 HCAPLUS
CN Iron lithium phosphate (Fe2Li1-2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1 - 2	7439-93-2
Fe	2	7439-89-6

IC ICM H01M004-58
ICS C01B025-45; H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 192194-49-3P, Iron lithium phosphate (Fe2Li(PO4)) 192194-51-7P, Iron lithium phosphate (Fe2Li1-2(PO4))
(cathodes; Fe Li phosphate cathode active mass for Li secondary batteries)

L25 ANSWER 50 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1996:739822 HCAPLUS Full-text
DOCUMENT NUMBER: 126:123873
ORIGINAL REFERENCE NO.: 126:23831a,23834a
TITLE: Synthesis, redox potential evaluation and electrochemical characteristics of NASICON-related-3D framework compounds
AUTHOR(S): Nanjundaswamy, K. S.; Padhi, A. K.; Goodenough, J. B.; Okada, S.; Ohtsuka, H.; Arai, H.; Yamaki, J.
CORPORATE SOURCE: Center for Materials Science and Engineering, University of Texas at Austin, ETC 9.102, Austin, TX, USA
SOURCE: Solid State Ionics (1996), 92(1,2), 1-10
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 16 Dec 1996

AB The framework compds. M2(SO4)3 with M = (Ti Fe), (V Fe), Fe and LixM2(PO4)3 with M = Ti, (V Fe), Fe were synthesized and electrochem. characterized by the coin-cell method. Use of larger (XO4)n- polyanions not only allows fast Li+-ion conduction in an open 3-dimensional framework that is selective for the working alkali ion on discharge; it also stabilizes operative redox potentials Fe3+/Fe2+, Ti4+/Ti3+, and V3+/V2+ that give open-circuit voltages Voc > 2.5 V as well as access to V4+/V3+, Ti3+/Ti2+, and Fe2+/Fe+ couples. Sepns. of the V4+/V3+ and V3+/V2+ couples are 2.0 V. Fe2(SO4)3 has both monoclinic and rhombohedral modifications that give a flat open-circuit voltage Voc = 3.6 V vs. Li and a reversible capacity for .apprx.1.8 Li atoms per formula unit. LixFe2(SO4)3 shows an abrupt voltage drop occurring for x > 2 that can be held in check by the addition of buffers such as Li3Fe2(PO4)3, FeV(SO4)3, and LiTi2(PO4)3. Changing the polyanion group from (SO4)2- to (PO4)3- in these framework compds. decreases the redox potentials from 3.2 to 2.5 V for the Ti4+/Ti3+ couple, from 2.5 to 1.7 V for the V3+/V2+ couple, and from 3.6 to 2.8 V for the Fe3+/Fe2+ couple. Comparative advantages and disadvantages of framework cathodes for Li rechargeable battery applications are discussed.

IT 186131-68-0P, Iron lithium vanadium phosphate (FeLi3V(PO4)3)
(synthesis and redox potential and electrochem. characteristics of)

RN 186131-68-0 HCAPLUS

CN Iron lithium vanadium phosphate (FeLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

CC 72-2 (Electrochemistry)
Section cross-reference(s): 52

IT 10028-22-5P, Iron sulfate (Fe2(SO4)3) 13701-70-7P, Vanadium sulfate (V2(SO4)3) 14521-02-9P, Iron titanium sulfate (FeTi(SO4)3) 30622-39-0P, Lithium titanium phosphate (LiTi2(PO4)3) 36058-25-0P, Iron lithium phosphate (Fe2Li3(PO4)3) 186131-68-0P, Iron lithium vanadium phosphate (FeLi3V(PO4)3) 186131-69-1P, Iron vanadium sulfate (FeV(SO4)3)
(synthesis and redox potential and electrochem. characteristics of)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 51 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1995:820825 HCAPLUS Full-text
DOCUMENT NUMBER: 123:233358
ORIGINAL REFERENCE NO.: 123:41567a,41570a
TITLE: Secondary alkali metal battery and its electrolyte
INVENTOR(S): Coetzer, Johan
PATENT ASSIGNEE(S): Lilliwyte S. A., Luxembourg
SOURCE: S. African, 30 pp.
CODEN: SFXXAB
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
ZA 9201893	A	19930913	ZA 1992-1893	19920313

<--
PRIORITY APPLN. INFO.: ZA 1991-1900 A 19910314
<--
ED Entered STN: 29 Sep 1995
AB The battery has an alkali metal anode, a transition metal halide cathode, and ≥1 liquid electrolyte MxARpXq, where M is an alkali metal or a mixture of these metals; A is selected from Al, B, and/or Zn; R is an organic radical or a mixture of these radicals; X is selected from organic radicals and/or halogens; x is ≥1; p is ≥ 1; q is ≤3; and p + q is ≥4 when A is selected from Al and/or B, and ≥3 when A is selected from Zn and mixts. comprising Zn.
IT 81295-89-8, Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2)
(alkali metal battery separator)
RN 81295-89-8 HCAPLUS
CN Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	2	17181-37-2
O4P	1	14265-44-2
Zr	2	7440-67-7
Li	3	7439-93-2

IC ICM H01M
ICS C23F
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 12005-14-0, Aluminum lithium oxide (Al5LiO8) 12005-16-2, Aluminum sodium oxide (Al5NaO8) 12005-48-0, Aluminum sodium oxide (Al11NaO17) 12505-59-8, Aluminum lithium oxide (Al11LiO17) 58572-20-6, Sodium zirconium phosphate silicate (Na3Zr2(PO4)(SiO4)2) 81295-89-8, Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2)
(alkali metal battery separator)

L25 ANSWER 52 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1993:655385 HCAPLUS Full-text
DOCUMENT NUMBER: 119:255385
ORIGINAL REFERENCE NO.: 119:45469a,45472a
TITLE: Lithium-containing glass-ceramics
INVENTOR(S): Hosono, Hideo; Abe, Yoshihiro
PATENT ASSIGNEE(S): Shingijutsu Kaihatsu Jigyodan, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05139781	A	19930608	JP 1991-308098	19911122

<--
PRIORITY APPLN. INFO.: JP 1991-308098 19911122
<--
ED Entered STN: 11 Dec 1993
AB The glass-ceramics contain Li1+xAlxTi2-x(PO4)3 (0 ≤ + ≤ 1.0), and are prepared by melting mixts. of Li-containing oxides and Ca3(PO4)2 to form a glass,

crystallizing the glass by heat treatment, and leaching Ca3(PO4)2 with acid. The glass-ceramics have high elec. conductivity and are suitable for use in batteries.

IT 151356-42-2, Aluminum lithium titanium phosphate (Al0-1Li1-2Ti1-2(PO4)3)
(glass-ceramics, manufacture of elec. conductive)

RN 151356-42-2 HCAPLUS

CN Aluminum lithium titanium phosphate (Al0-1Li1-2Ti1-2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	1 - 2	7440-32-6
Li	1 - 2	7439-93-2
Al	0 - 1	7429-90-5

IC ICM C03C010-02
ICS C03C004-16

CC 57-1 (Ceramics)
Section cross-reference(s): 52

IT 151356-42-2, Aluminum lithium titanium phosphate (Al0-1Li1-2Ti1-2(PO4)3)
(glass-ceramics, manufacture of elec. conductive)

L25 ANSWER 53 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1992:163310 HCAPLUS Full-text
DOCUMENT NUMBER: 116:163310
ORIGINAL REFERENCE NO.: 116:27425a,27428a
TITLE: Synthesis and electrical conductivity of vanadium bronzes by molten salt electrolysis
AUTHOR(S): Kaneko, Yoshikazu; Kojima, Hironao
CORPORATE SOURCE: Fac. Eng., Yamanashi Univ., Kofu, 400, Japan
SOURCE: Solid State Ionics (1991), 49, 167-73
CODEN: SSIOD3; ISSN: 0167-2738
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 17 Apr 1992

AB The ionic-electronic conducting compds. of lithium vanadium bronzes, copper vanadium bronzes, and Mo doped vanadium bronzes were obtained from molten LiVO3-V2O5 system, V2O5-Li3PO4 system, V2O5-CuCl system, and V2O5-Li2MoO4 system by electrolysis. The electrolysis conditions were determined from the cyclic voltammograms of electrolytic bath at 650° to 800°. The mixture melts of V2O5 containing 9.1 mol% Li3PO4 were used as the ideal composition of electrolytic bath for β-Li0.36V2O5 crystallization The lithium contents of β-Li0.36V2O5 crystals were controlled with c.d. and composition of electrolytic bath. The crystals of Li0.29V1.82Mo0.18O were obtained from electrolysis of V2O5 melts containing 25 mol% Li2MoO4. The activation energy of conductivity for Mo doped lithium vanadium bronzes was less than the non Mo doped bronzes.

IT 139900-33-7, Lithium vanadium oxide phosphate (Li0.24V0.51O1.27(PO4)0.75)
(cyclic voltammogram of)

RN 139900-33-7 HCAPLUS

CN Lithium vanadium oxide phosphate (Li2.24V0.51O1.27(PO4)0.75) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	1.27	17778-80-2
O4P	0.75	14265-44-2
V	0.51	7440-62-2
Li	2.24	7439-93-2

CC 76-1 (Electric Phenomena)
Section cross-reference(s): 72, 78
IT 139900-32-6, Lithium vanadium oxide phosphate (Li0.27V1.82O4.54(PO4)0.09) 139900-33-7, Lithium vanadium oxide phosphate (Li0.24V0.51O1.27(PO4)0.75) 139900-34-8, Lithium vanadium oxide (Li0.57V1.43O3.86)
(cyclic voltammogram of)

L25 ANSWER 54 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1991:665266 HCAPLUS Full-text
DOCUMENT NUMBER: 115:265266
ORIGINAL REFERENCE NO.: 115:44917a,44920a
TITLE: Intercalation in 3D-skeleton structures: ionic and electronic features
AUTHOR(S): Hagenmuller, Paul; Delmas, Claude
CORPORATE SOURCE: Lab. Chimie Solide, Univ. Bordeaux I, Talence, 33405, Fr.
SOURCE: Materials Research Society Symposium Proceedings (1991), 210(Solid State Ionics 2), 323-34
CODEN: MRSPDH; ISSN: 0272-9172
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 14 Dec 1991
AB The voltage of an electrochem. cell, i.e. the difference between the chemical potentials of the two electrodes, may play the role of a sensor which allows to display the structural modifications and the phys. properties. The electrochem. processes involved in an alkali metal (A) intercalation electrode emphasize the influence of the ionic and/or electronic features. The A+-lattice and A+-A+ interactions as well as electronic band-filling may lead to phase transitions or even limit the intercalation reaction. The shape of the cell voltage vs. intercalation rate curve depends on the number of vacant sites available for intercalation, the number and the oxidation state of the reducible cations, the band structure of the material and the covalency of the framework. Alkali ion intercalation in 3D-structures related to perovskite (Ln1/3NbO3), hexagonal tungsten bronze (LiW3O9F) and Nasicon-type (AM2(PO4)3) is discussed from that point of view. In Ln1/3NbO3 (Ln = La, Nd) (i.e. .box. 1/2Ln1/3.box.'1/6NbO3) Li+ intercalation in various sites is related to the rare earth size. Two extra lithium atoms can be introduced into LiW3O9F in which four sites are available, but only one out of two is occupied in order to reduce the electrostatic interactions. Moreover the change in the discharge curves can be associated to the modifications with intercalation rate of the Li+-lattice interactions. Within the Nasicon derived structures of ATi2(PO4)3 and Fe2(MoO4)3 the intercalation process is limited by the lowest stable oxidation state of titanium or iron. In both systems the strong electronic localization leads to formation of large two phase-domains. The relevance of using 3D-intercalation electrodes in electrochem. power batteries will be discussed as for factors such as elec. behavior or absence of significant unit cell modifications of the pos. electrodes during the intercalation process are essential for many cycle utilizations.
IT 119536-20-8, Lithium titanium phosphate (Li1-3Ti2(PO4)3)
(charging and discharging of, intercalation in relation to)
RN 119536-20-8 HCAPLUS
CN Lithium titanium phosphate (Li1-3Ti2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	1 - 3	7439-93-2

CC 72-2 (Electrochemistry)
Section cross-reference(s): 78
IT 119536-20-8, Lithium titanium phosphate (Li1-3Ti2(PO4)3)
119536-21-9, Sodium titanium phosphate (Na1-3Ti2(PO4)3)
(charging and discharging of, intercalation in relation to)

L25 ANSWER 55 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1991:232057 HCAPLUS Full-text
DOCUMENT NUMBER: 114:232057
ORIGINAL REFERENCE NO.: 114:39107a,39110a
TITLE: Lithium ion-conductive solid electrolyte containing lithium titanium phosphate
INVENTOR(S): Adachi, Ginya; Imanaka, Nobuhito; Aono, Hiromichi; Sugimoto, Eisuke; Sadaoka, Yoshihiko; Yasuda, Naoshi; Hara, Takeo; Nagata, Masaki
PATENT ASSIGNEE(S): Japan Synthetic Rubber Co., Ltd., Japan
SOURCE: U.S., 15 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4985317	A	19910115	US 1989-372075 <--	19890628
JP 02148655	A	19900607	JP 1988-302539 <--	19881130
JP 02148656	A	19900607	JP 1988-302540 <--	19881130
JP 02162605	A	19900622	JP 1988-315800 <--	19881214
JP 03029206	A	19910207	JP 1989-259832 <--	19891004

PRIORITY APPLN. INFO.:
JP 1988-302539 A 19881130 <--
JP 1988-302540 A 19881130 <--
JP 1988-315800 A 19881214 <--
JP 1989-57367 A 19890309 <--

ED Entered STN: 15 Jun 1991
AB The electrolyte is Li1+xMxTi2-x(PO)3, Li1+yTi2SiyP3-yO12, or a compound obtained by mixing LiTi2(PO4)3 with another Li compound, where M is ≥1 element selected from Fe, Al, Sc, Y, La, and rare earth elements; x = 0.1-1.9; and y = 0.1-2.9. The electrolyte can be used in small and thin batteries in the form of a sheet of an insulating elastomer with 55-95 volume% of uniformly dispersed solid electrolyte powder. Several invention electrolytes were prepared, and their ion conductivity, Li+ transport number, and chemical stability are reported.
IT 133340-01-9, Lithium scandium titanium phosphate (Li1.1-2.9Sc0.1-1.9Ti0.1-1.9(PO4)3) 133340-02-0, Aluminum

lithium titanium phosphate (Al0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133340-03-1, Iron lithium titanium phosphate (Fe0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133340-04-2, Lithium titanium phosphate silicate (Li1.1-3.9Ti2(PO4)0.1-2.9(SiO4)0.1-2.9) 133517-12-1, Lanthanum lithium titanium phosphate (La0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133741-58-9, Lithium titanium yttrium phosphate (Li1.1-2.9Ti0.1-1.9Y0.1-1.9(PO4)3)
(electrolytes, lithium ion-conductive, for small and thin batteries)

RN 133340-01-9 HCAPLUS
CN Lithium scandium titanium phosphate (Li1.1-2.9Sc0.1-1.9Ti0.1-1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Sc	0.1 - 1.9	7440-20-2
Li	1.1 - 2.9	7439-93-2

RN 133340-02-0 HCAPLUS
CN Aluminum lithium titanium phosphate (Al0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2
Al	0.1 - 1.9	7429-90-5

RN 133340-03-1 HCAPLUS
CN Iron lithium titanium phosphate (Fe0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2
Fe	0.1 - 1.9	7439-89-6

RN 133340-04-2 HCAPLUS
CN Lithium titanium phosphate silicate (Li1.1-3.9Ti2(PO4)0.1-2.9(SiO4)0.1-2.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1 - 2.9	17181-37-2
O4P	0.1 - 2.9	14265-44-2
Ti	2	7440-32-6
Li	1.1 - 3.9	7439-93-2

RN 133517-12-1 HCAPLUS
CN Lanthanum lithium titanium phosphate (La0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2
La	0.1 - 1.9	7439-91-0

RN 133741-58-9 HCAPLUS
CN Lithium titanium yttrium phosphate (Li1.1-2.9Ti0.1-1.9Y0.1-1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Y	0.1 - 1.9	7440-65-5
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2

IC ICM H01M006-18
INCL 429191000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39, 72, 76
IT 133340-01-9, Lithium scandium titanium phosphate (Li1.1-2.9Sc0.1-1.9Ti0.1-1.9(PO4)3) 133340-02-0, Aluminum lithium titanium phosphate (Al0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133340-03-1, Iron lithium titanium phosphate (Fe0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133340-04-2, Lithium titanium phosphate silicate (Li1.1-3.9Ti2(PO4)0.1-2.9(SiO4)0.1-2.9) 133517-12-1, Lanthanum lithium titanium phosphate (La0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133741-58-9, Lithium titanium yttrium phosphate (Li1.1-2.9Ti0.1-1.9Y0.1-1.9(PO4)3)
(electrolytes, lithium ion-conductive, for small and thin batteries)

L25 ANSWER 56 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1989:466661 HCAPLUS Full-text
DOCUMENT NUMBER: 111:66661
ORIGINAL REFERENCE NO.: 111:11111a,11114a
TITLE: Synthesis using solid electrolyte
INVENTOR(S): Yokoyama, Seiichiro
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01042589	A	19890214	JP 1987-196267 <--	19870807
PRIORITY APPLN. INFO.:			JP 1987-196267 <--	19870807

ED Entered STN: 20 Aug 1989

AB The title method involves applying a potential to an electrode catalyst comprising an electrode and metal-ion-conductive solid electrolyte, and contacting a raw material (in vapor phase) to the electrode catalyst. Thus, an electrode of K2O.11Al2O3 was used for forming paraformaldehyde from MeOH.

IT 81295-89-8
(solid electrolytes, as electrode catalyst for electrolysis)

RN 81295-89-8 HCAPLUS

CN Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	2	17181-37-2
O4P	1	14265-44-2
Zr	2	7440-67-7
Li	3	7439-93-2

IC ICM C25B003-02

CC 72-9 (Electrochemistry)
Section cross-reference(s): 23, 51

IT 12005-47-9 12267-44-6 58572-20-6 71211-68-2 80892-16-6 81295-89-8
(solid electrolytes, as electrode catalyst for electrolysis)

L25 ANSWER 57 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1989:123586 HCAPLUS Full-text

DOCUMENT NUMBER: 110:123586

ORIGINAL REFERENCE NO.: 110:20257a,20260a

TITLE: The NASICON-type titanium phosphates ATi2(PO4)3 (A = lithium, sodium) as electrode materials

AUTHOR(S): Delmas, C.; Nadiri, A.; Soubeyroux, J. L.

CORPORATE SOURCE: Lab. Chim. Solide, Univ. Bordeaux I, Talence, 33405, Fr.

SOURCE: Solid State Ionics (1988), Volume Date 1987, 28-30(Pt. 1), 419-23
CODEN: SSIOD3; ISSN: 0167-2738

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 03 Apr 1989

AB Li and Na were intercalated in LiTi2(PO4)3 and NaTi2(PO4)3, resp.. Despite the low electronic conductivity of the Nasicon framework the intercalation can be realized either chemical or electrochem. The electrochem. study shows the reversibility of the process and the existence of large biphased domains in both systems. The observed phase separation reactions result from Li+(Na+) and e- migration without skeleton bond breaking and recombination. The large hexagonal c-parameter of Li3Ti2(PO4)3 results from a peculiar Li ion distribution (M(1) empty, M(2) fully occupied) as shown by neutron diffraction.

IT 119536-20-8P, Lithium titanium phosphate (Li1-3Ti2(PO4)3)
119536-22-0P, Lithium titanium phosphate (Li2.72Ti2(PO4)3)
119536-23-1P, Lithium titanium phosphate (Li1-3.3Ti2(PO4)3)
(formation of, electrochem.)

RN 119536-20-8 HCAPLUS

CN Lithium titanium phosphate (Li1-3Ti2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2

Ti	2	7440-32-6
Li	1 - 3	7439-93-2

RN 119536-22-0 HCAPLUS
CN Lithium titanium phosphate (Li2.72Ti2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	2.72	7439-93-2

RN 119536-23-1 HCAPLUS
CN Lithium titanium phosphate (Li1-3.3Ti2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	1 - 3.3	7439-93-2

CC 72-2 (Electrochemistry)
Section cross-reference(s): 76, 78
IT 119536-20-8P, Lithium titanium phosphate (Li1-3Ti2(PO4)3)
119536-21-9P, Sodium titanium phosphate (Na1-3Ti2(PO4)3)
119536-22-0P, Lithium titanium phosphate (Li2.72Ti2(PO4)3)
119536-23-1P, Lithium titanium phosphate (Li1-3.3Ti2(PO4)3)
(formation of, electrochem.)

L25 ANSWER 58 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1987:416602 HCAPLUS Full-text
DOCUMENT NUMBER: 107:16602
ORIGINAL REFERENCE NO.: 107:2659a,2662a
TITLE: Lithium intercalation in lithium titanium phosphate (LiTi2(PO4)3)
AUTHOR(S): Nadiri, Abdelilah; Delmas, Claude
CORPORATE SOURCE: Lab. Chim. Solide, Univ. Bordeaux-I, Talence, 33405, Fr.
SOURCE: Comptes Rendus de l'Academie des Sciences, Serie II: Mecanique, Physique, Chimie, Sciences de la Terre et de l'Univers (1987), 304(9), 415-18
CODEN: CRAMED; ISSN: 0764-4450
DOCUMENT TYPE: Journal
LANGUAGE: French
ED Entered STN: 11 Jul 1987
AB Li was intercalated either chemical or electrochem. in LiTi2(PO4)3. Two Li1-xTi2(PO4)3 solid solns. were obtained for $0 \leq x \leq 0.23$ and $1.72 \leq x \leq 2$. The reversible character of the intercalation reaction shows that the 3D Nasicon skeleton maintains. Nevertheless, the large difference in cell parameters between both solid solns. suggests a strong modification in the Li site occupancy.
IT 108823-16-1P
(preparation by electrochem. intercalation and crystal structure of)
RN 108823-16-1 HCAPLUS
CN Lithium titanium phosphate (Li1.72-2Ti2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	1.72 - 2	7439-93-2

CC 78-3 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 72, 75
IT 108823-15-0P 108823-16-1P
(preparation by electrochem. intercalation and crystal structure of)

L25 ANSWER 59 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1982:151389 HCAPLUS Full-text
DOCUMENT NUMBER: 96:151389
ORIGINAL REFERENCE NO.: 96:24769a,24772a
TITLE: Lithium anode battery
PATENT ASSIGNEE(S): Nippon Telegraph and Telephone Public Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 56162477	A	19811214	JP 1980-65972 <--	19800520
PRIORITY APPLN. INFO.:			JP 1980-65972 <--	A 19800520

ED Entered STN: 12 May 1984
AB A Li anode battery employs Li3Zr2Si2PO12 or Li14Zn(GeO4)4 as the cathode active material and an electrolyte which is stable towards the cathode-active material and Li, Li+ being transported to effect an electrochem. reaction with the cathode active material.
IT 81295-89-8
(cathodes, in lithium batteries)
RN 81295-89-8 HCAPLUS
CN Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	2	17181-37-2
O4P	1	14265-44-2
Zr	2	7440-67-7
Li	3	7439-93-2

IC H01M004-58; H01M004-38; H01M006-16; H01M010-40
CC 72-3 (Electrochemistry)
IT 70780-99-3 81295-89-8
(cathodes, in lithium batteries)

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                 SEL RN

     FILE 'REGISTRY' ENTERED AT 13:46:49 ON 15 SEP 2008
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L3            51 SEA ABB=ON  PLU=ON  (12190-79-3/BI OR 782495-23-2/BI OR
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                 782495-27-6/BI OR 782495-28-7/BI OR 782495-29-8/BI OR
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L4          3811 SEA ABB=ON  PLU=ON  (LI(L)P(L)O(L)(TI OR V OR CR OR MN OR
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                 OR W OR PT OR AU))/ELS
L5            49 SEA ABB=ON  PLU=ON  L4 AND L3
L6             2 SEA ABB=ON  PLU=ON  L3 NOT L5
L7           521 SEA ABB=ON  PLU=ON  L4 AND 2-7/LI
L8          3655 SEA ABB=ON  PLU=ON  L4 AND O>=2
L9          3102 SEA ABB=ON  PLU=ON  L4 AND 3.5-8/O
L10         2942 SEA ABB=ON  PLU=ON  L9 AND 0.01-1/M
L11          476 SEA ABB=ON  PLU=ON  L7 AND L9 AND L10

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L14          201 SEA ABB=ON  PLU=ON  L13 AND SOLID ELECTROLYT?
L15            1 SEA ABB=ON  PLU=ON  L14 AND L1
L16           85 SEA ABB=ON  PLU=ON  L14 AND DEV/RL
L17           59 SEA ABB=ON  PLU=ON  L16 AND (1840-2003)/PRY,AY,PY

     FILE 'HCAPLUS' ENTERED AT 14:22:27 ON 15 SEP 2008
L18            1 SEA ABB=ON  PLU=ON  L12 AND (1840-2003)/PRY,AY,PY
L19           59 SEA ABB=ON  PLU=ON  L17 OR L18

     FILE 'REGISTRY' ENTERED AT 14:23:18 ON 15 SEP 2008
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L21          473 SEA ABB=ON  PLU=ON  L11 AND TIS/CI

     FILE 'HCAPLUS' ENTERED AT 14:34:41 ON 15 SEP 2008
L22          210 SEA ABB=ON  PLU=ON  L21
L23            4 SEA ABB=ON  PLU=ON  L22 AND L19
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L24          117 SEA ABB=ON  PLU=ON  L22 AND ELECTROCHEM?/SC,SX
L25           59 SEA ABB=ON  PLU=ON  L24 AND (1840-2003)/PRY,AY,PY
L26            1 SEA ABB=ON  PLU=ON  L25 AND
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